

Digital Video Mixer

Service Manual



VIDEONICS
The Video Editing Company

MX-1 FATHER BOARD DEBUGGING FLOW CHART

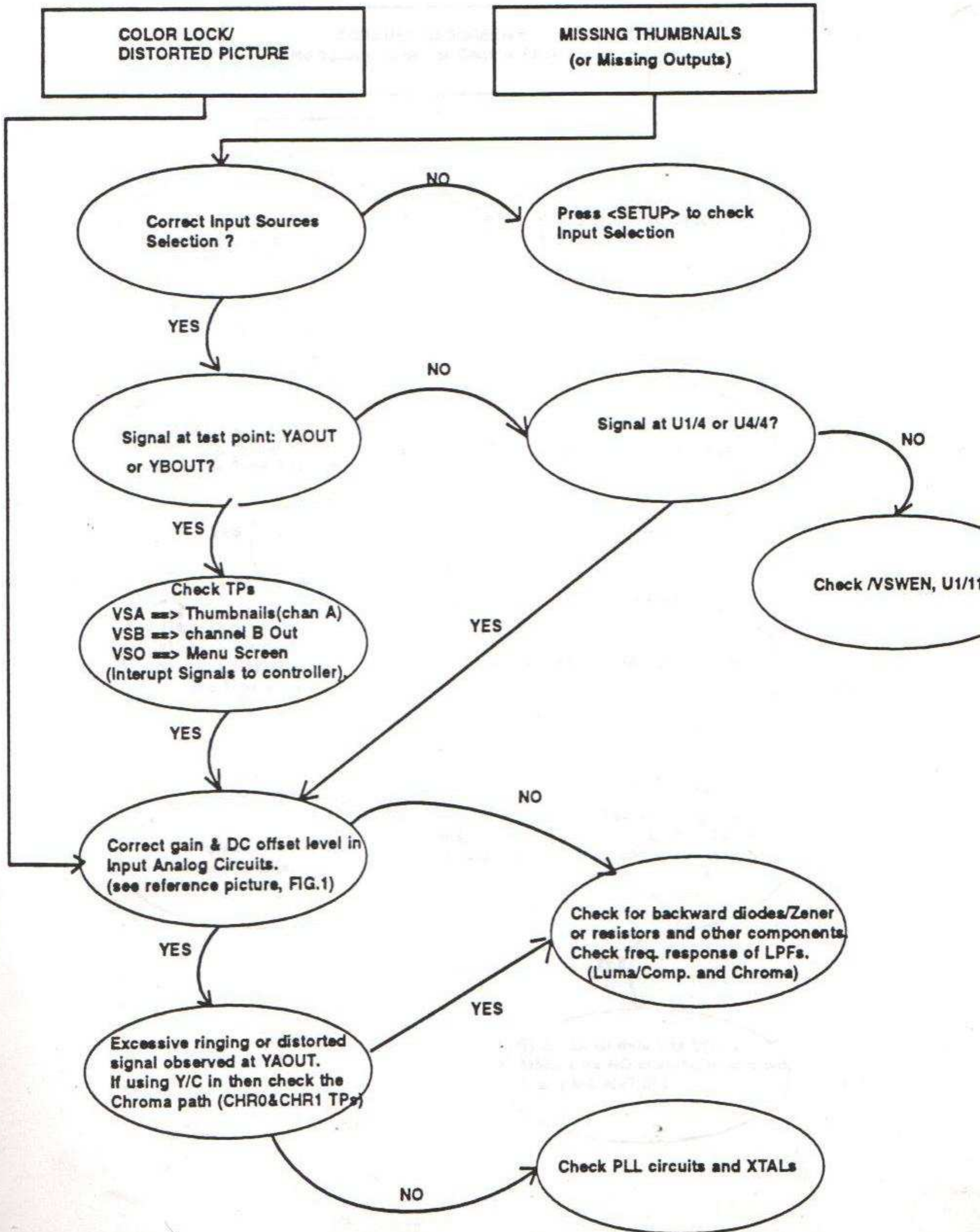
01/27/95

FATHER BOARD SYMPTOMS

I

COLOR LOCK/
DISTORTED PICTURE

MISSING THUMBNAILS
(or Missing Outputs)

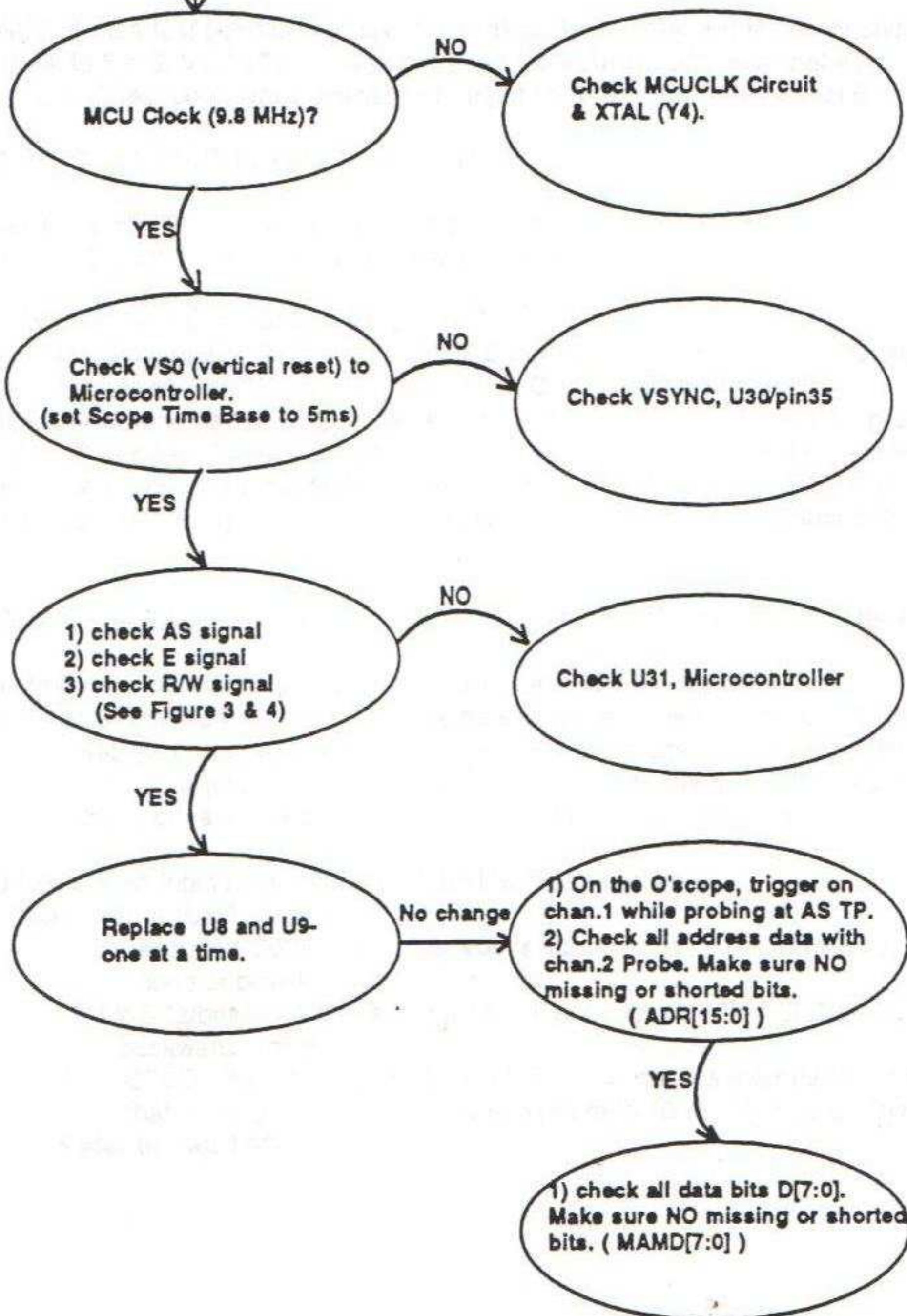


MX-1 FATHER BOARD DEBUGGING FLOW CHART

01/23/95

FATHER BOARD SYMPTOMS

SCRAMBLED SCREEN
(No Splash screen or Control Panel)



FATHER BOARD TROUBLE SHOOTING GUIDE THROUGH JAN. 27, 1995

PROBLEM	COMPONENT	LIKELY CAUSE
NO SOUND DIO	Q1	DEFECTIVE OR SOLDER SHORT
	L2	MISSING
	Q59	DEFECTIVE
	R107	MISSING OR POORLY SOLDERED
	R111	MISSING
	R113	DEFECTIVE
CANNOT ADJUST	Y1	DEFECTIVE
CHANNEL COLOR	Q31	DEFECTIVE OR POORLY SOLDERED
	JACK	POORLY SOLDERED
	Q29	POORLY SOLDERED
	C190	POORLY SOLDERED
	C201	MISSING
	U27	DEFECTIVE OR POORLY SOLDERED
CHANNEL COLOR LOCK	Y3	DEFECTIVE
	R253	POORLY SOLDERED
	Y2	DEFECTIVE
	C145	WRONG VALUE
	D31	DEFECTIVE OR MISSING
	C141	REVERSED OR WRONG VALUE
	R254	POORLY SOLDERED
CHANNEL HALF THERE	U30	DEFECTIVE
CHANNEL MISSING	C221	TRACE DAMAGED OR WRONG VALUE
	D13	DEFECTIVE
	Y2	DEFECTIVE
	D23	DEFECTIVE
	R186	POORLY SOLDERED OR TRACE DAMAGED
	U18	DEFECTIVE OR POORLY SOLDERED
CHANNEL NOISY	D31	DEFECTIVE OR REVERSED
	R229	POORLY SOLDERED
	U26	DEFECTIVE
	U27	POORLY SOLDERED
	Y2	DEFECTIVE
CHANNEL OVERSIZED	U30	DEFECTIVE
CHANNEL SCRAMBLED	JACK	POORLY SOLDERED
	U26	DEFECTIVE OR POORLY SOLDERED

Mixer Father Board Tune Up Procedure
PROC-0055-01 Revision A; 02/27/95

- 4.2.0.4. Half-n-half fixed test begins. This displays digital, time base corrected, channel "B" in top half of the screen and channel "A" in bottom half of the screen. Input video source is Y/C-1.
- 4.2.1. **Adjust Channel A Chroma A to D:**
 - 4.2.1.1. While watching the monitor display adjust the blue pot, RV4 until the vertical lines on the video disappear. This pot will adjust only the bottom half of the monitor display.
- 4.2.2 **Adjust Channel B Chroma A to D:**
 - 4.2.2.1. Adjust the second blue pot RV3 and follow the same adjustment procedure as for the first blue pot. This time the top half of the monitor will be adjusted. Turn the pot until the vertical lines disappear.
 - 4.2.2.2. Continue running this MFG Test [01] to be used for matching the Luminance.
- 4.3. **Match Luminance of Channel A to B:**

While watching the monitor display, adjust RV2 so that the horizontal split line disappears in the middle two Dark Gray Title and background.
- 4.4. **Match Horizontal Position of Channel A to B (Left/Right Shift)**
 - 4.4.1. While watching the monitor display, adjust RV1 so that the vertical edge of the lines separating the letter "P", "R" or "B" or Box line up above and below the horizontal split line.
 - 4.4.2. Press the <OK> key to exit back to the Top Level MFG Test Menu.
 - 4.4.3. Power off the board, and remove cable connections.

Tune-up procedure is complete

CHANNELS MISMATCHED	D12	DEFECTIVE OR POORLY SOLDERED
	D13	DEFECTIVE
	D16	DEFECTIVE
	R187	MISSING
	POTS	ADJUSTED
	D14	DEFECTIVE
	C101	WRONG VALUE
	C191	MISSING
	U26	DEFECTIVE
CHANNELS SCRAMBLED	JACK	POORLY SOLDERED
COLOR	R503	MISSING OR POORLY SOLDERED
COMPOSITE FLICKERS	Q30	POORLY SOLDERED
	POTS	ADJUSTED
	Q31	DEFECTIVE
COMPOSITE NO VIDEO	Q15	POORLY SOLDERED OR REVERSED
	L6	POORLY SOLDERED
FLICKERS	R503	MISSING
FREQUENCY	Y1	DEFECTIVE
LED	LED	DEFECTIVE, POORLY SOLDERED OR REVERSED
NO POWER/VCC SHORT	C146	POORLY SOLDERED
	SW1	POORLY SOLDERED OR TRACE DAMAGED
	C222	POORLY SOLDERED
	C284	POORLY SOLDERED
	L24	DEFECTIVE
	R80	POORLY SOLDERED
NO VIDEO	L22	DEFECTIVE
	U31	POORLY SOLDERED
	L4	DEFECTIVE
	Y1	DEFECTIVE
SOURCE MENU BLANK	U31	POORLY SOLDERED
SOURCE MENU FLICKERS	U31	POORLY SOLDERED

SOURCE MENU SCRAMBLED	U31 U30 U27 U35 Y4 U34	POORLY SOLDERED POORLY SOLDERED OR TRACE DAMAGED POORLY SOLDERED DEFECTIVE, POORLY SOLDERED OR TRACE DAMAGED DEFECTIVE POORLY SOLDERED
AKE BAR	RV6 POTS C242	DEFECTIVE, LOOSE OR POORLY SOLDERED ADJUSTED POORLY SOLDERED
HUMBNAILS CHECKERED	C201	DEFECTIVE OR POORLY SOLDERED
HUMBNAILS COLOR	JACK Q31	DEFECTIVE OR POORLY SOLDERED DEFECTIVE, MISSING OR POORLY SOLDERED
HUMBNAILS MISSING	Q30 JACK Y3 D17 D16 Q31 U27 C201	DEFECTIVE, MISSING OR POORLY SOLDERED POORLY SOLDERED DEFECTIVE DEFECTIVE, MISSING OR REVERSED DEFECTIVE DEFECTIVE OR MISSING DEFECTIVE MISSING OR POORLY SOLDERED
HUMBNAILS ROLL	U27	DEFECTIVE
HUMBNAILS SCRAMBLED	JACK	POORLY SOLDERED
/C COLOR	JACK	DEFECTIVE OR POORLY SOLDERED
/C FLICKERS	Q30 POTS Q31	DEFECTIVE OR POORLY SOLDERED ADJUSTED DEFECTIVE
/C NO VIDEO	JACK Q18	POORLY SOLDERED MISSING
/C SCRAMBLED	JACK	POORLY SOLDERED

Mixer Father Board Tune Up Procedure

PROC-0055-01 Revision A; 02/27/95

- 2.2. Connect the Y/C cable to the Video In 1 connector, top most connector (J7) and all the RCA composite cables to all other composite inputs.
- 2.3. Connect the composite RCA cable from Monitor Input B to the Preview Video output, bottom most yellow connector J1.
- 2.4. Attach the keyboard cable to the socket connector on the main pcb at JP3. The red and brown wires must be oriented to the right.

3. Initialization:

- 3.1. Power on the Mixer under test. The power, audio, video, and "A" LEDs should come on, the "B" LED should blink off and on. The Videonics Mixer "Splash Screen" will be displayed momentarily then the Mixer "Control Panel" will be displayed on the Preview output, (Monitor video input "B") which is the only output connected for Tune-Up.
- 3.2. Check the "thumbnail" (small video image) in all four windows across the top of the display. Insure that they are the correct color and brightness, and none are flashing or missing.

4. MX1 Father Board Tune Up:

- 4.1. **Adjust 13.5Mhz clock:**
 - 4.1.1. From the frequency counter, clip the probe tip on pin 8, U28 and the black ground alligator clip to GND test point (TP26).
 - 4.1.2. Adjust the variable capacitor CV1 until the frequency is 13,500,000 (13.5Mhz) +/- 100hz. **Caution: if the frequency counter doesn't change as you rotate the alignment tool, it's probably because the blade on the alignment tool is too short, and you aren't actually moving the variable caps moving plate.**
 - 4.1.3. Power cycle the Mixer under test, insure that the frequency adjustment hasn't changed.
 - 4.1.4. Insure that the video thumbnails are still correct color, no flashing or black and white.
 - 4.1.5. Disconnect the frequency counter test probe from the main pcb.
- 4.2. **Adjust Chroma channels:**
 - 4.2.0.1. Enter the manufacturing test menu by pressing and holding the following keys simultaneously: <SHIFT>, <FLIP>, and <AUDIO/VIDEO>. The Top Level MFG Test Menu will appear.
 - 4.2.0.2. The top level MFG Test Menu has three options, [01], [02], and [03].
 - 4.2.0.3. From the Top Level MFG Test Menu select option [01], by using the four way cursor positioning key (Diamond Key). When the cursor is on the [01] option press the <OK> key.

Mixer Father Board Tune Up Procedure
PROC-0055-01 Revision A; 02/27/95

1. Equipment:

1. Composite Video sources:

a. SOURCE 1 (Y/C & Composite):

For PAL: TM2000 with set up as following:

- Background: Lightest Gray Background with the control color bars set up as indicated- Hue (top bar) at 000, Saturation (middle bar) at 000, and lightness (bottom bar) at 150.*
- Font: Block (the fourth down from Menu).
- Size: Biggest (the right most size selection).
- Title: Darker Gray letters P, R, B (Hue:000, Saturation:000, Lightness:100) with Black outline and box.

For NTSC: TM2000 with set up as following:

- Background: Blue background (default color palette selection)* with the control color bars set up as indicated- Hue at 80, Saturation at 120, and lightness at 30.
 - Font: Block (the fourth down from Menu).
 - Size: Biggest (the right most size selection).
 - Title: Darker Grey letters P, R, B (Hue: 000, Saturation: 000, Lightness: 100) with lighter Grey outline and box (Hue: 000, Saturation: 000, and Lightness: 150).
- b. SOURCE 2 (Composite): TM2000 with "horizontal" color bar output (selected from MFG Test Menu).**
- c. SOURCE 3 (Composite): TM 2000 with Solid RED Background output (the third Red down from background color palette (Hue:195; Saturation:145, Lightness:050)).**
- d. SOURCE 4 (Composite): TM 2000 with Solid GREEN Background output (the first Green from background color palette (Hue:102, Saturation:151, Lightness:61)).**

2. Frequency counter (8 digits) with Test Probe (X1).

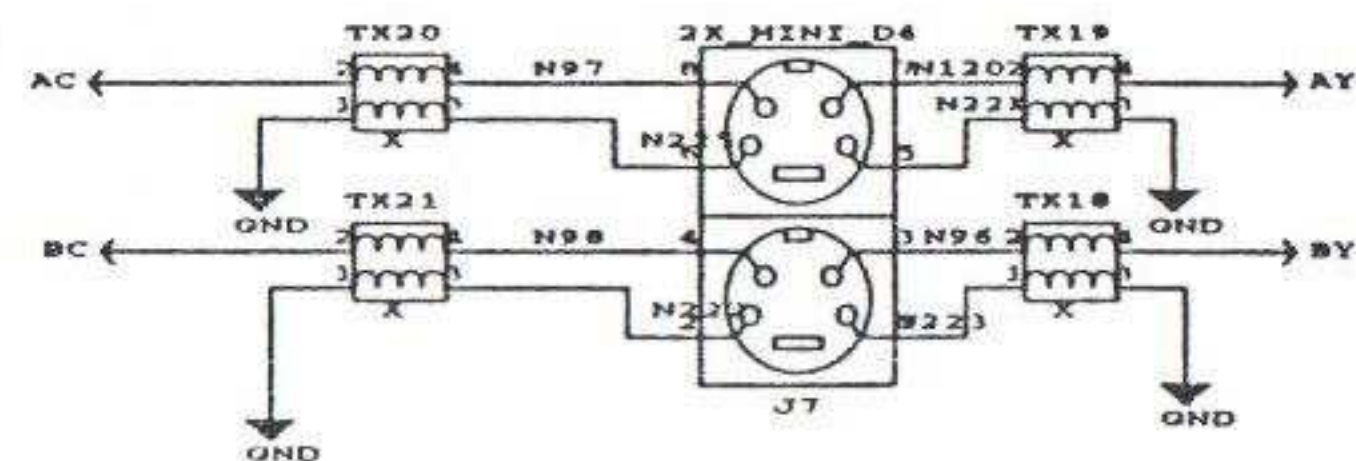
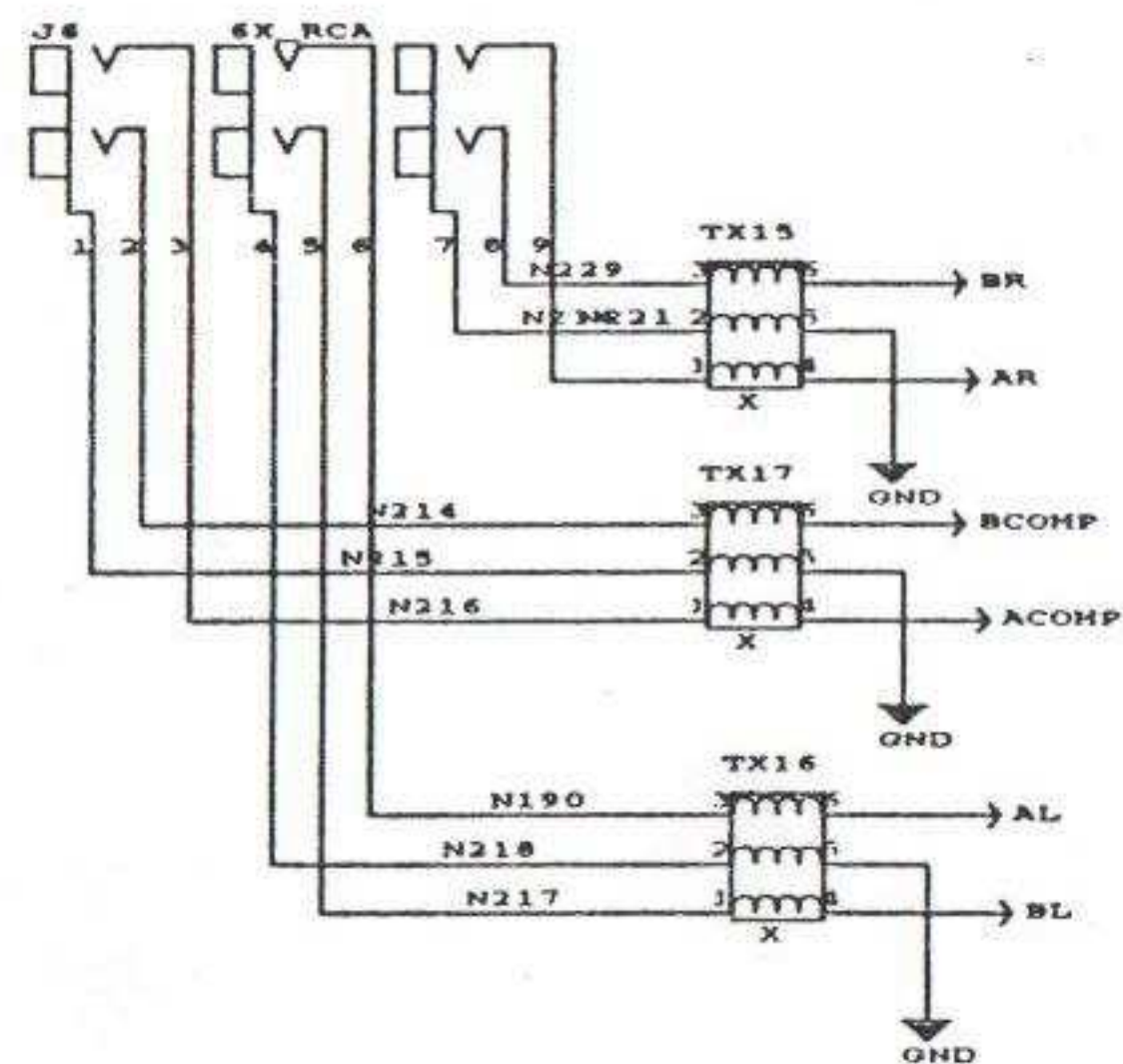
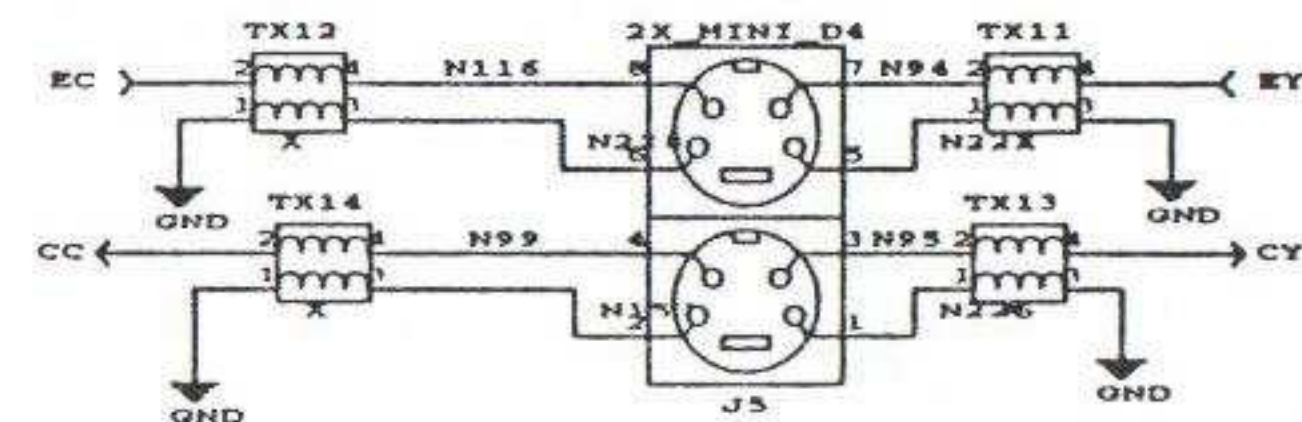
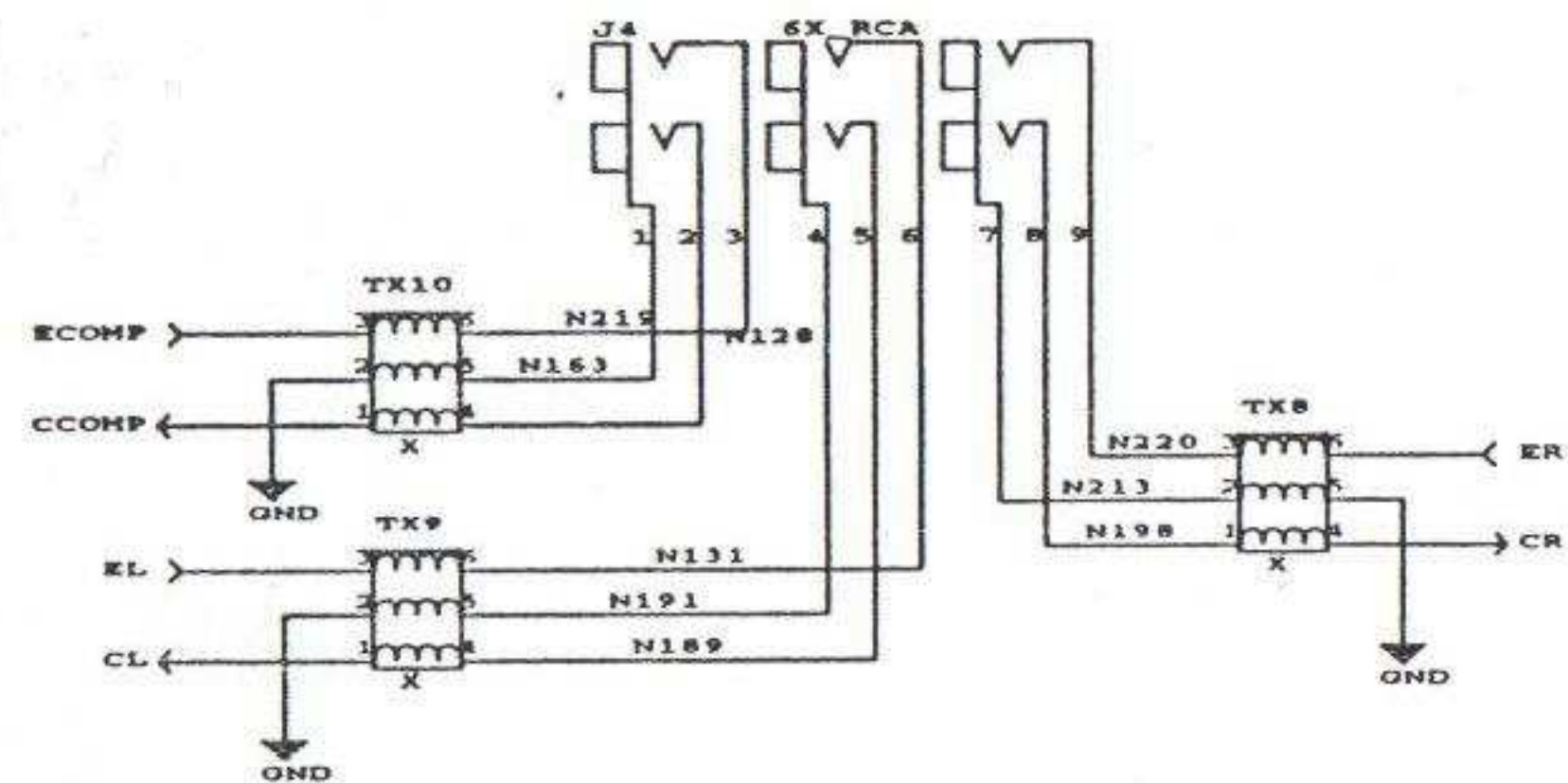
3. Video monitor with composite input. Recommended SONY PVM 1344Q.

Note that all input sources should have nominal Subcarrier frequency (14.31818MHZ for NTSC & 17.734475MHz for PAL, +/- 100 Hz).

* Press <SHIFT>, <COMMAND> and <UNDO> keys simultaneously to get into MFG Test Menu. Select "Reset Database" then press <OK> to clear all previous memories. Use the Up/Down cursor to select Exit Menu then proceed the set up procedure for T2000. Refer to TM2000 Instruction Manual (chapter 14) for more details.

2. Cable Hookup:

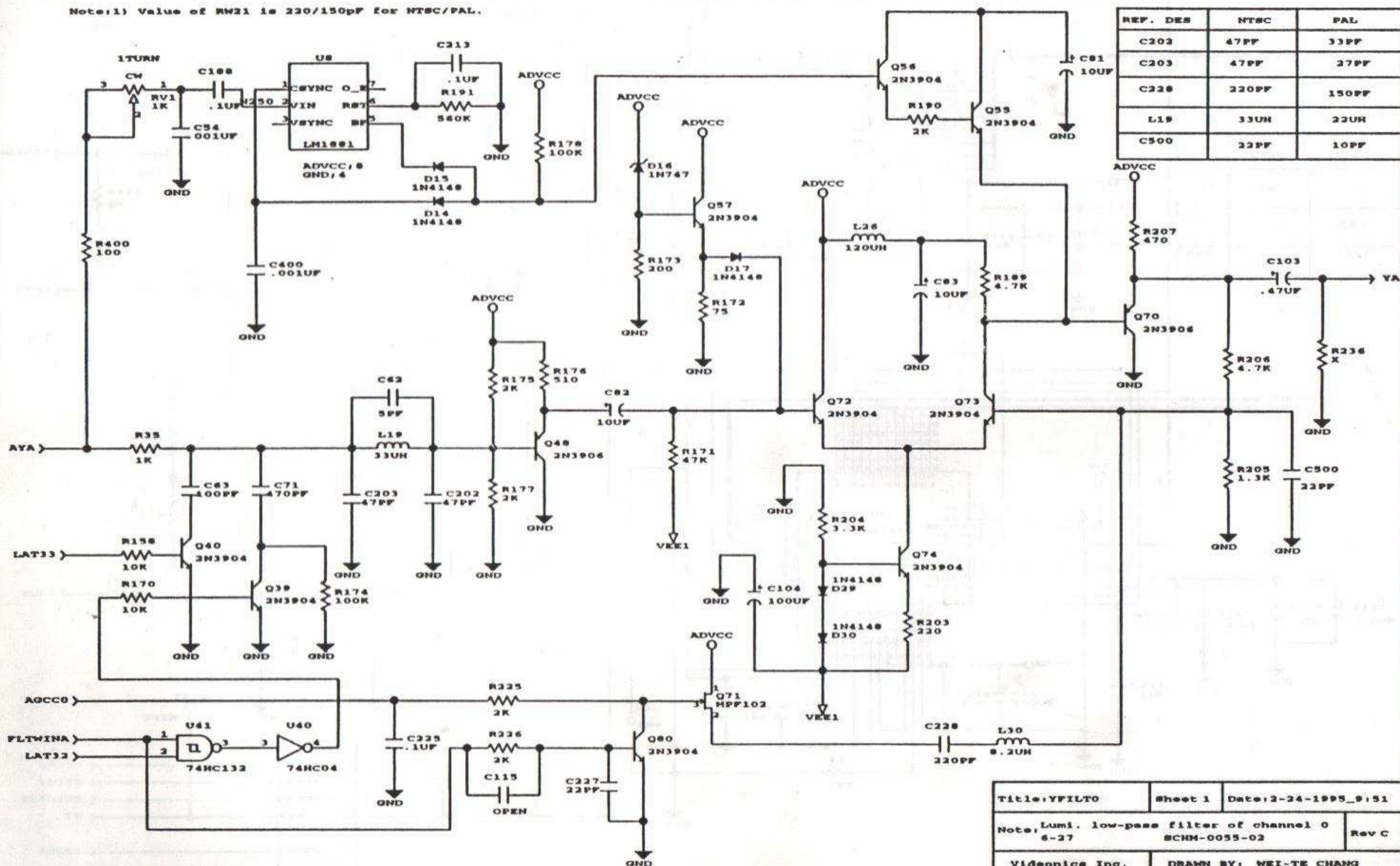
2.1. Install the board onto the test fixture.



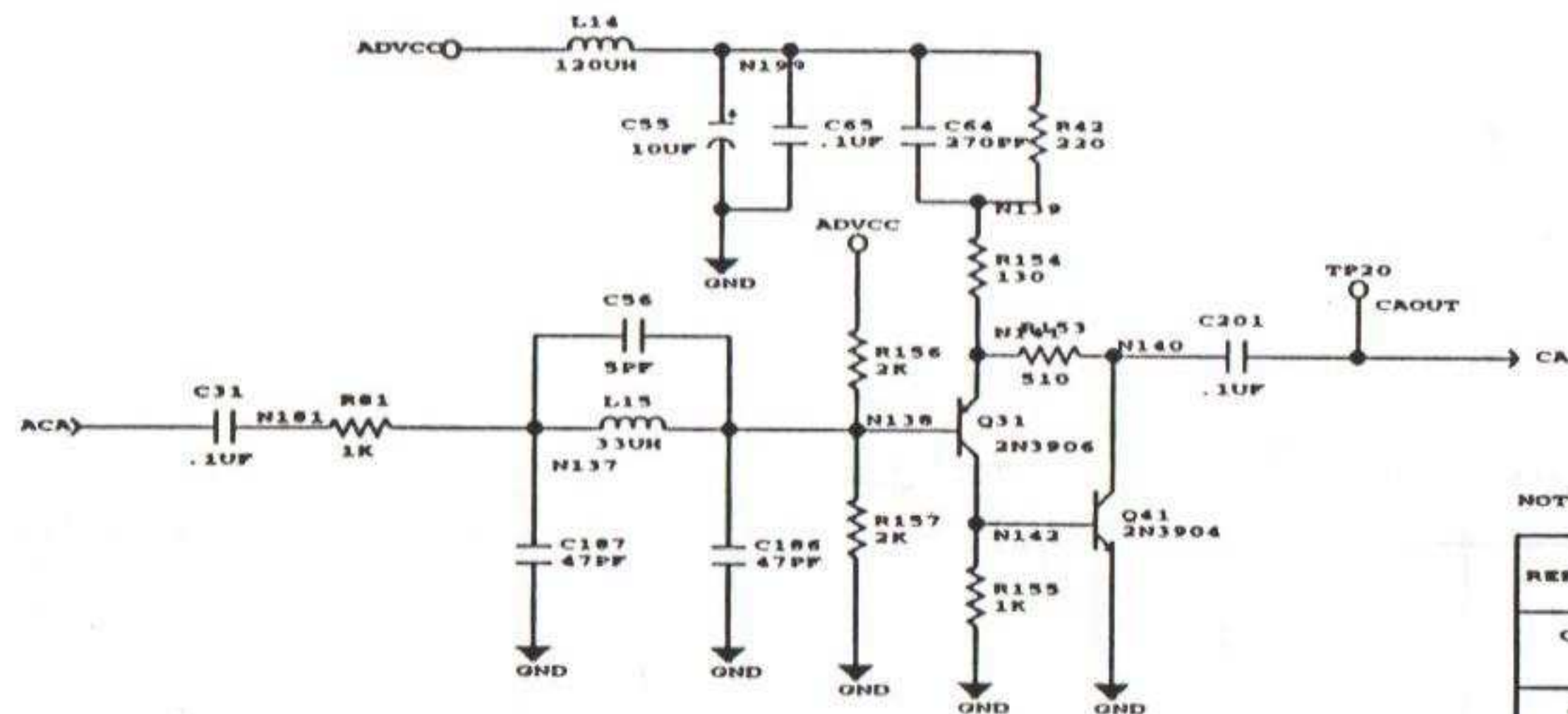
NOTE:
ALL DESIGNATORS WITH TX ARE BYPASSED

Title: NIX_CON	Sheet 1	Date: 2-24-1995_P: 17
Notes: 2-27	SCNM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

Note: 1) Value of RW21 is 220/150pF for NTSC/PAL.



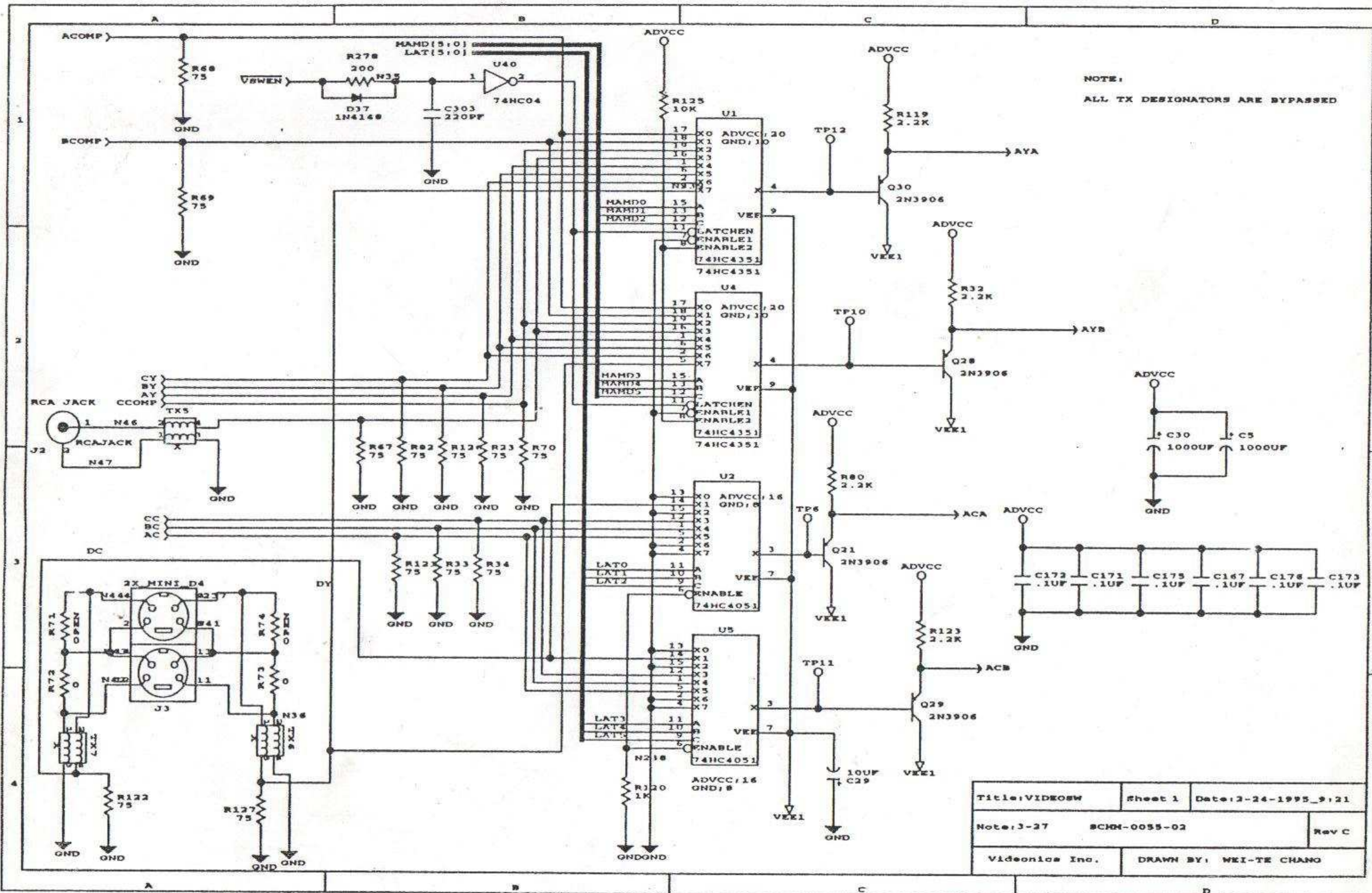
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Note: Lumi. low-pass filter of channel 0 6-27	SCHM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

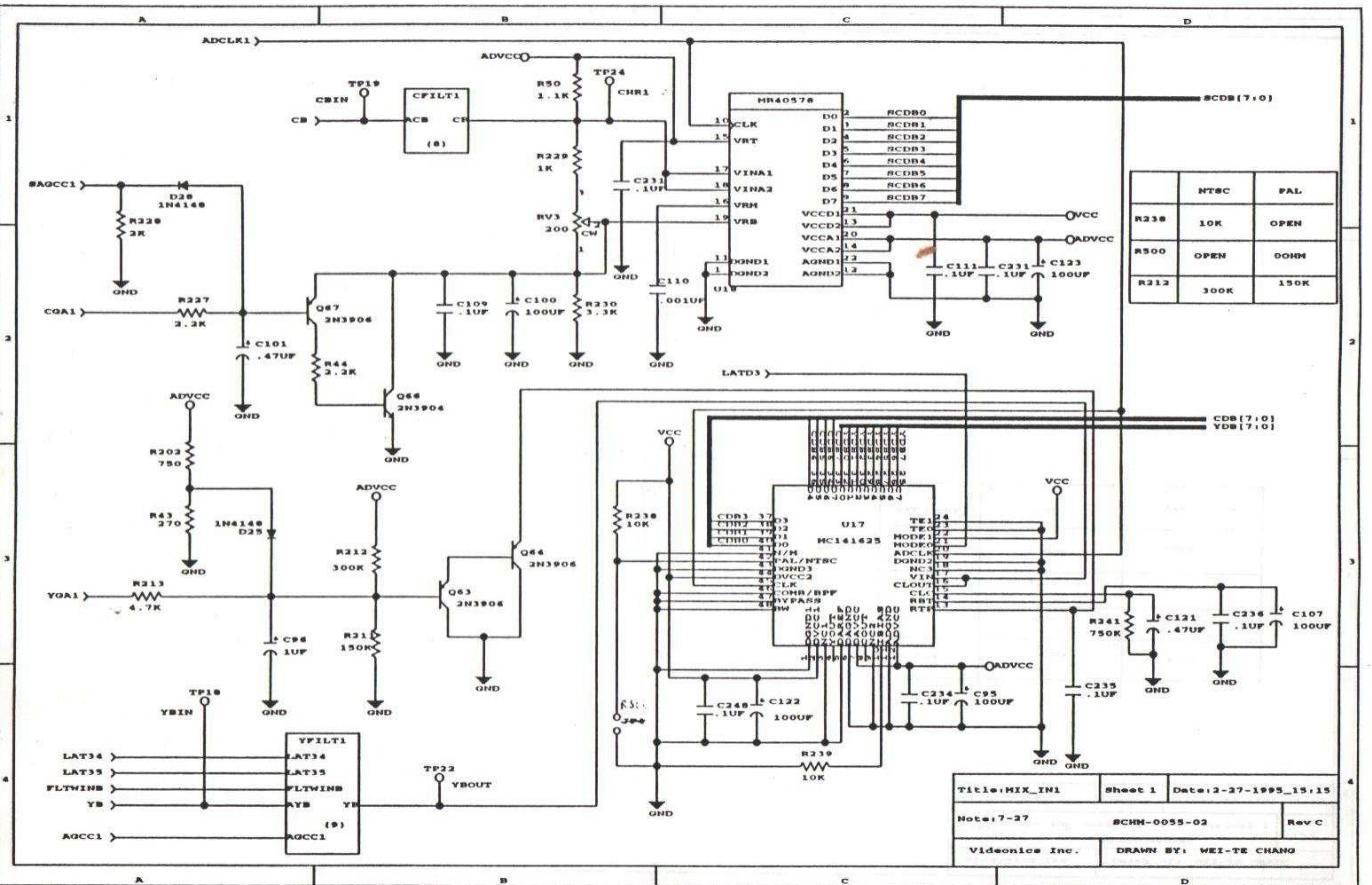


NOTE: COMPONENT DIFFERENCES BETWEEN NTSC AND PAL

REF. DES.	NTSC	PAL
C64	270PF	OPEN
C187	47PF	33PF
C186	47PF	33PF
L15	33UH	22UH

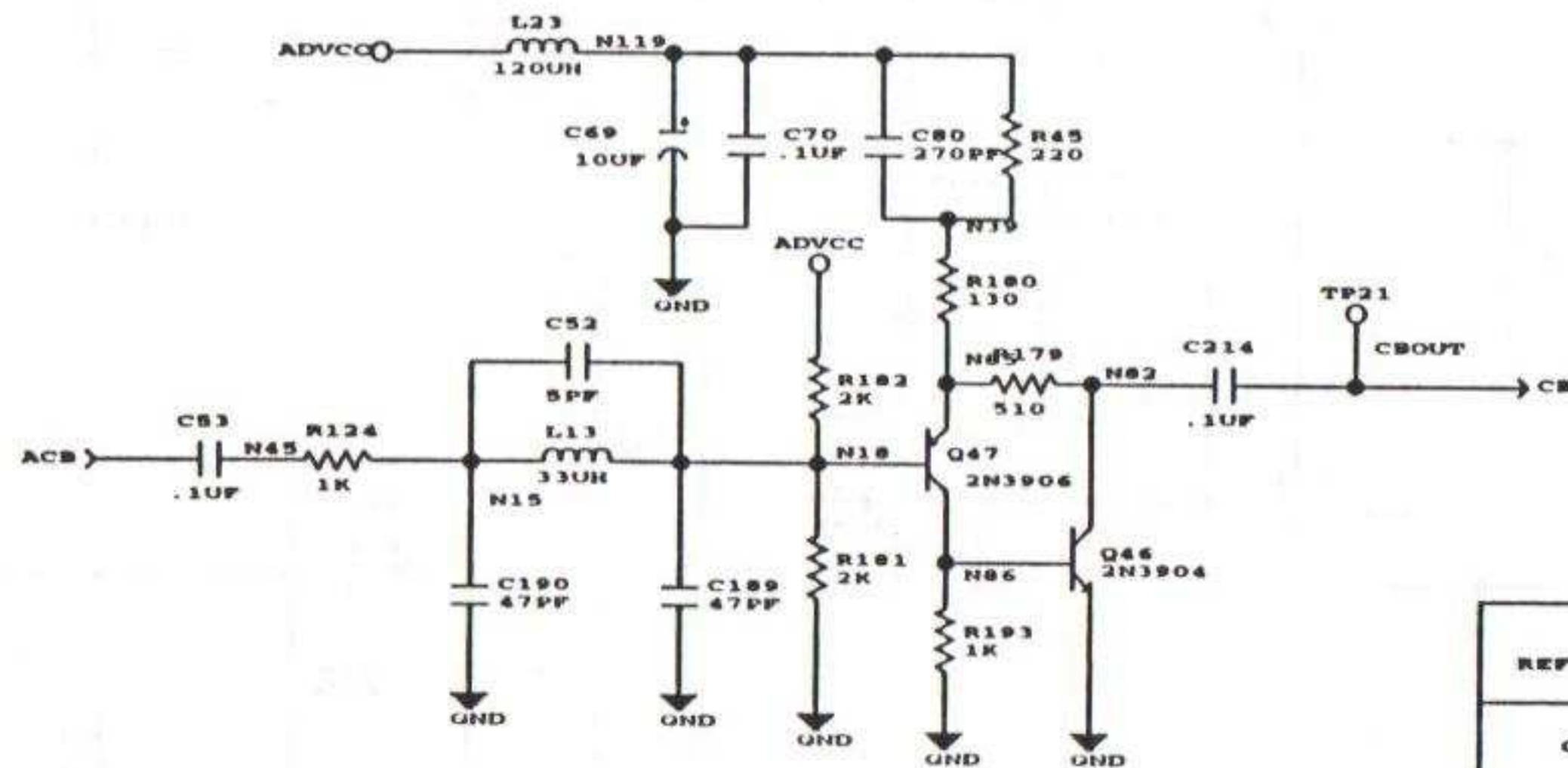
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Note: Chroma low-pass filter of channel 0 5-27		Rev C
Videonics Inc.		DRAWN BY: WEI-TE CHANG





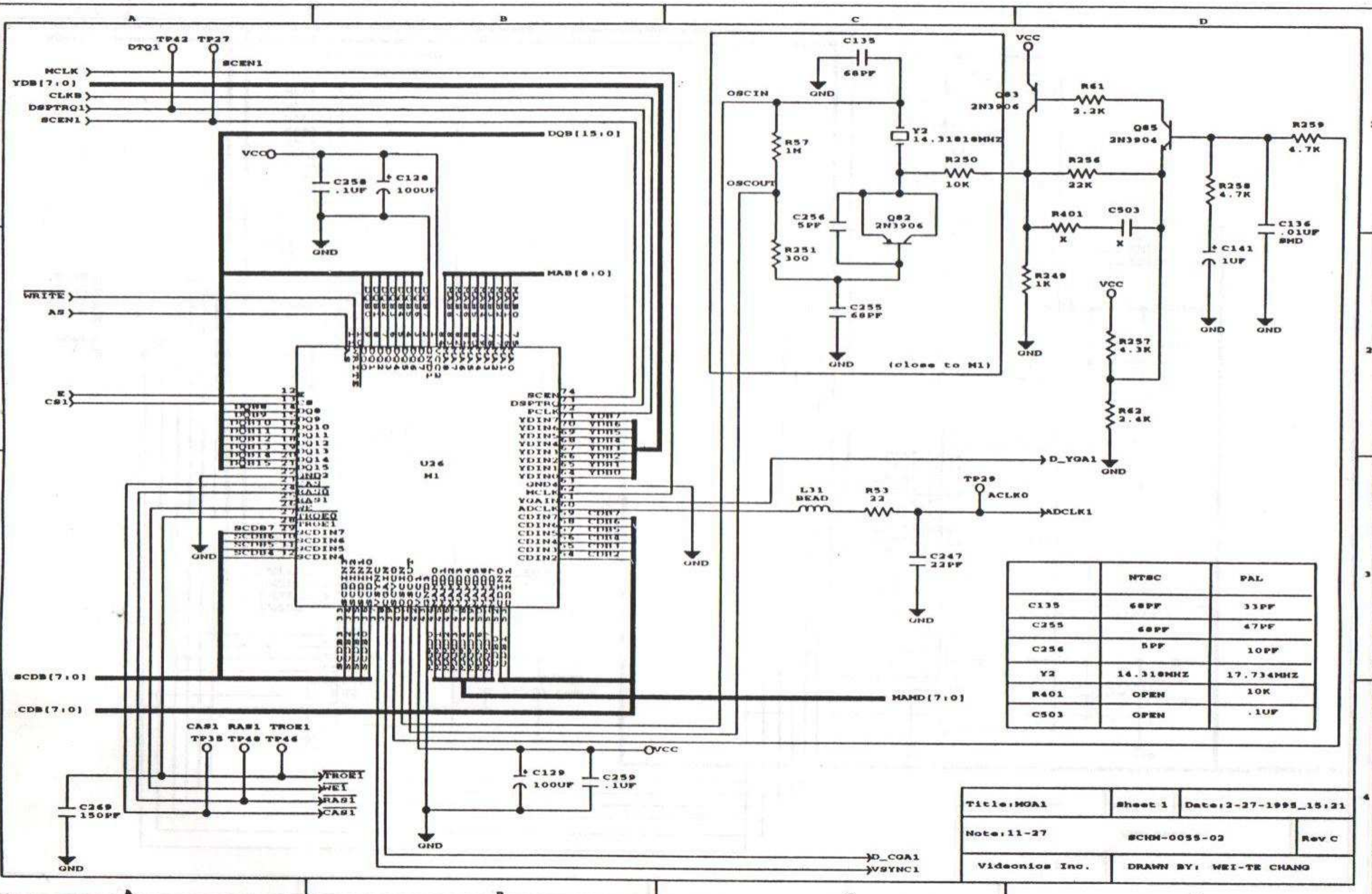
	NTSC	PAL
R238	10K	OPEN
R500	OPEN	00HM
R212	300K	150K

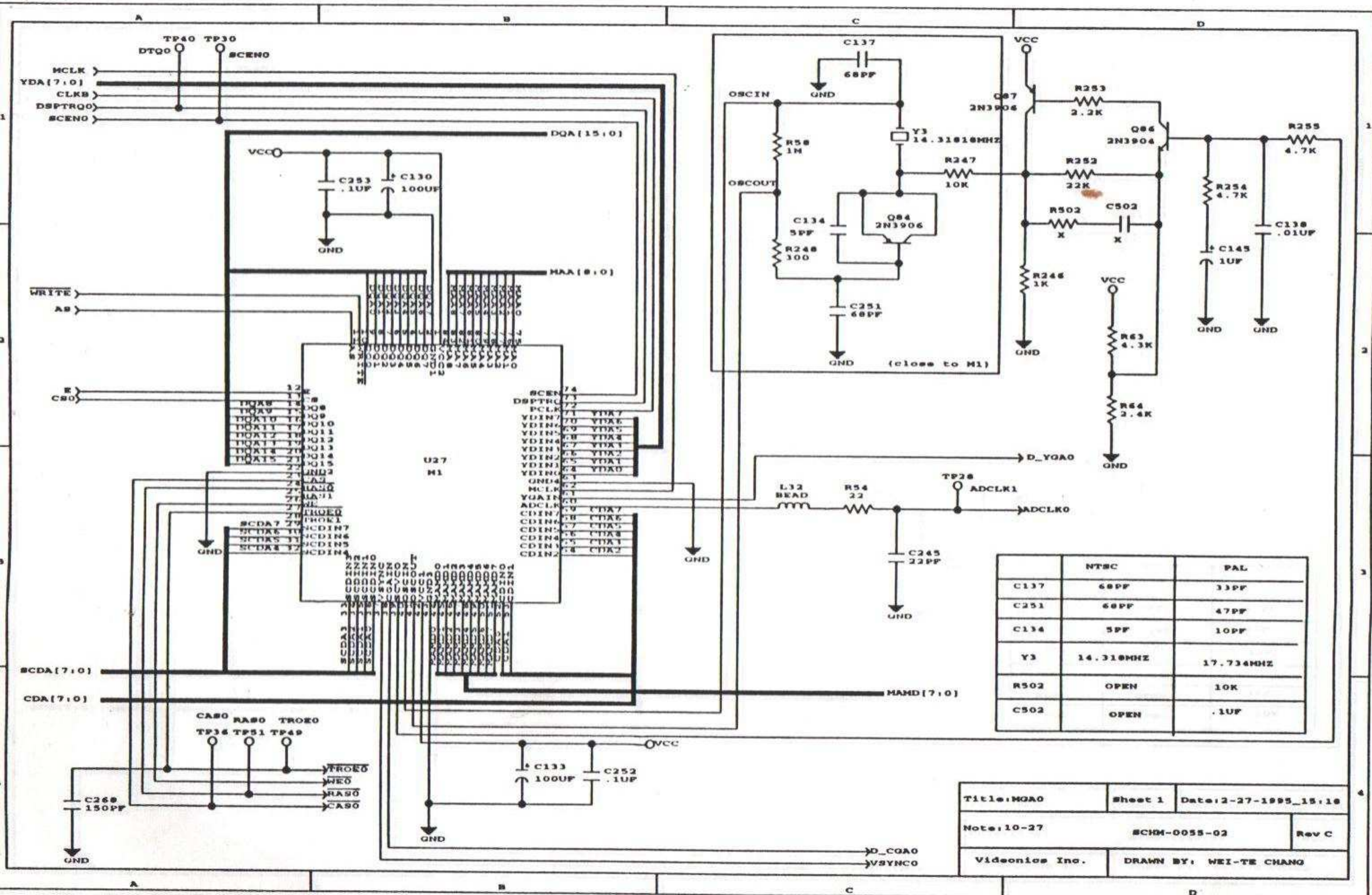
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Note: 7-27	SCHN-0055-02	Rev C
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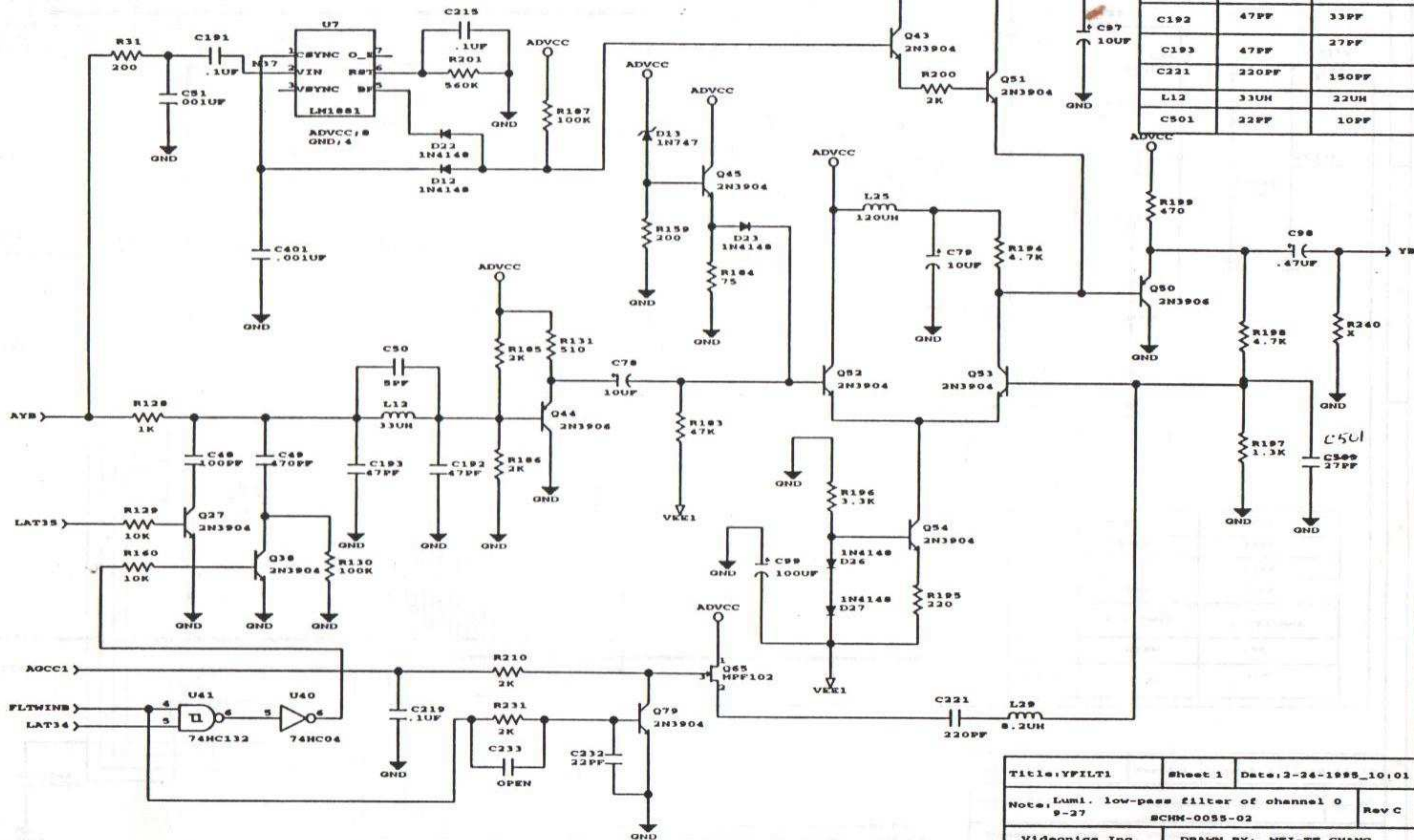
REF. DES.	NTSC	PAL
C80	270PF	OPEN
C189	47PF	33PF
C190	47PF	33PF
L13	33UH	22UH

Title: CFILT1	Sheet 1	Date: 2-27-1995_15:16
Note: Chroma low-pass filter of channel 1 8-27		Rev C
Videonics Inc.		DRAWN BY: WEI-TE CHANG





Note: 1) Value of RW21 is 220/150pF for NTSC/PAL.



MAA[8:0]
DQA[15:0]

CHANNEL A LUMINANCE

V52C4258

MAA8 17 A8
MAA7 22 A7
MAA6 18 A6
MAA5 19 A5
MAA4 20 A4
MAA3 21 A3
MAA2 24 A2
MAA1 25 A1
MAA0 26 A0

DQA15 3 IO4
DQA14 2 IO3
DQA13 13 IO2
DQA12 12 IO1

QSF 27
#IO4 6
#IO3 5
#IO2 10
#IO1 9

FDINA15
FDINA14
FDINA13
FDINA12

RAS0
CAS0
DT/OE0
WE0
S0E0
SC0

16 RAS
28 CAS
11 DT/OE
14 WE
1 DSF
4 SE
8 SC

U49

GND

VDD

VSS

C274

.1UF

C160

100UF

GND

V52C4258

MAA8 17 A8
MAA7 22 A7
MAA6 18 A6
MAA5 19 A5
MAA4 20 A4
MAA3 21 A3
MAA2 24 A2
MAA1 25 A1
MAA0 26 A0

DQA11 3 IO4
DQA10 2 IO3
DQA9 13 IO2
DQA8 12 IO1

QSF 27
#IO4 6
#IO3 5
#IO2 10
#IO1 9

FDINA11
FDINA10
FDINA9
FDINA8

16 RAS
28 CAS
11 DT/OE
14 WE
1 DSF
4 SE
8 SC

U47

GND

VDD

VSS

C285

.1UF

C166

100UF

GND

CHANNEL A CHROMA

V52C4258

MAA8 17 A8
MAA7 22 A7
MAA6 18 A6
MAA5 19 A5
MAA4 20 A4
MAA3 21 A3
MAA2 24 A2
MAA1 25 A1
MAA0 26 A0

DQA7 3 IO4
DQA6 2 IO3
DQA5 13 IO2
DQA4 12 IO1

QSF 27
#IO4 6
#IO3 5
#IO2 10
#IO1 9

FDINA7
FDINA6
FDINA5
FDINA4

16 RAS
28 CAS
11 DT/OE
14 WE
1 DSF
4 SE
8 SC

U48

GND

VDD

VSS

C284

.1UF

C146

100UF

GND

V52C4258

MAA8 17 A8
MAA7 22 A7
MAA6 18 A6
MAA5 19 A5
MAA4 20 A4
MAA3 21 A3
MAA2 24 A2
MAA1 25 A1
MAA0 26 A0

DQA1 3 IO4
DQA2 2 IO3
DQA3 13 IO2
DQA0 12 IO1

QSF 27
#IO4 6
#IO3 5
#IO2 10
#IO1 9

FDINA3
FDINA2
FDINA1
FDINA0

16 RAS
28 CAS
11 DT/OE
14 WE
1 DSF
4 SE
8 SC

U46

GND

VDD

VSS

C275

.1UF

C144

100UF

GND

FDINA[15:0]

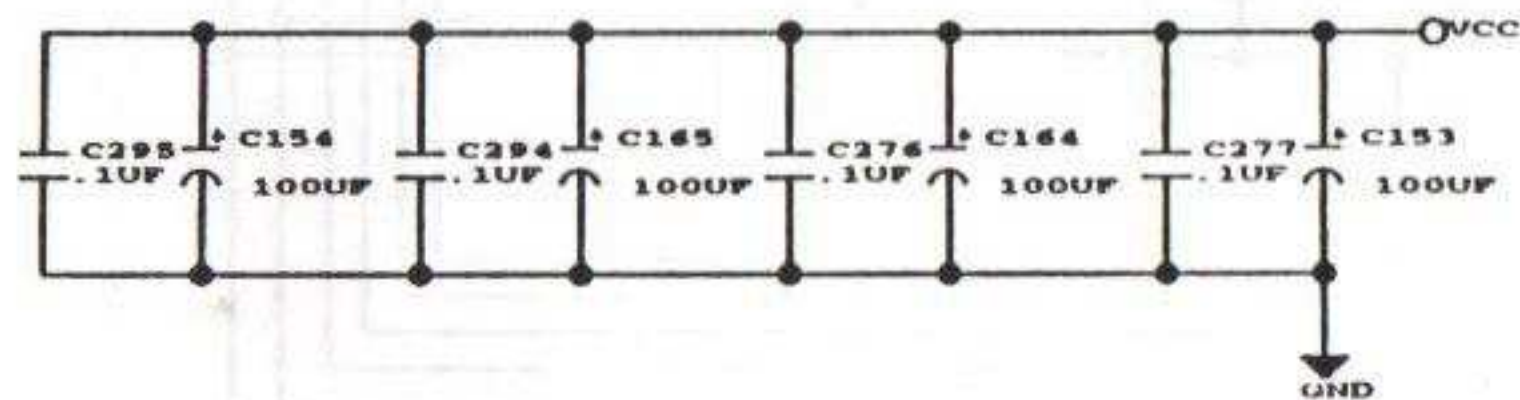
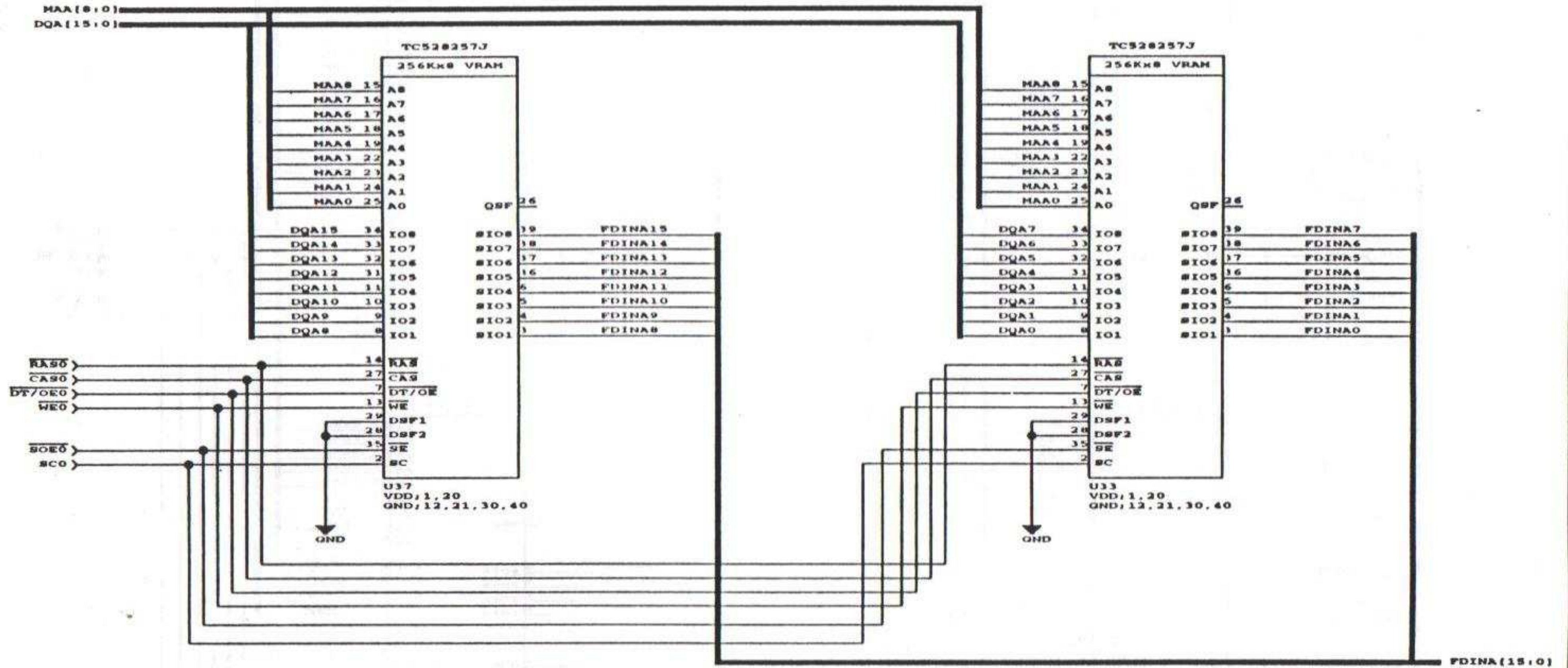
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Note: 12-27 SCHM-0055-02 Rev C

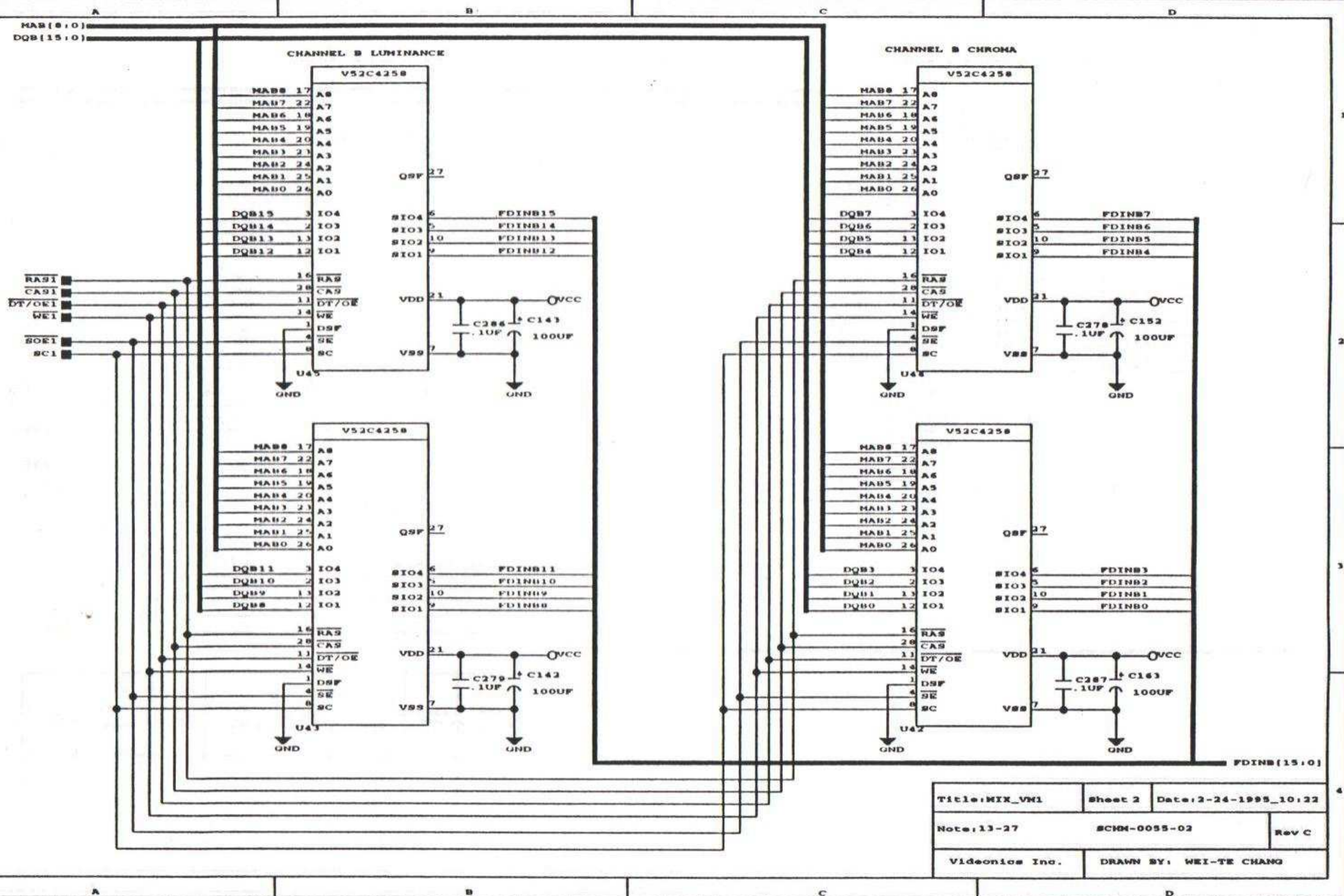
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CHANNEL A LUMINANCE

CHANNEL A CHROMA

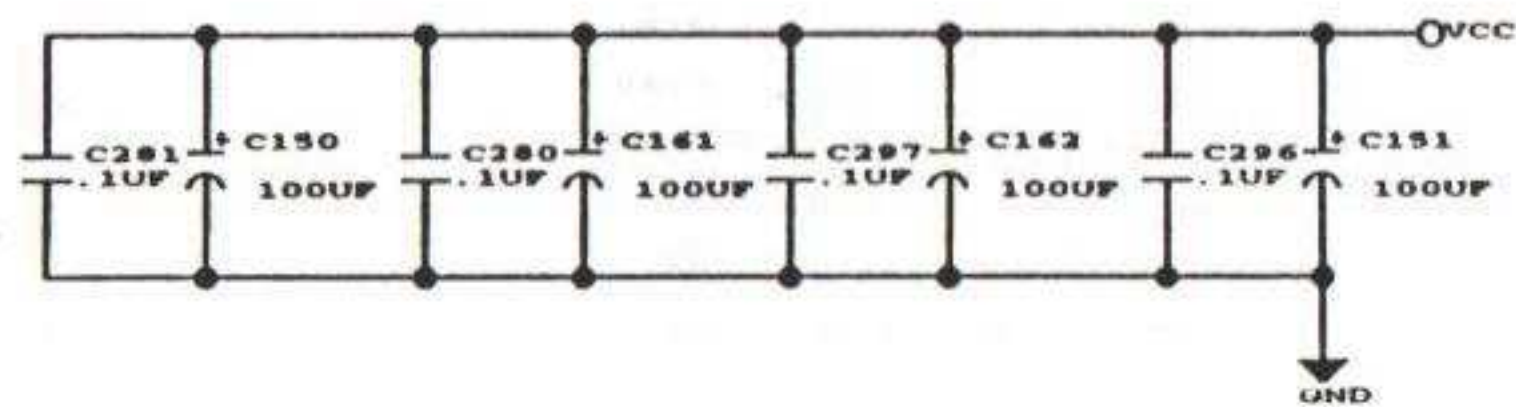
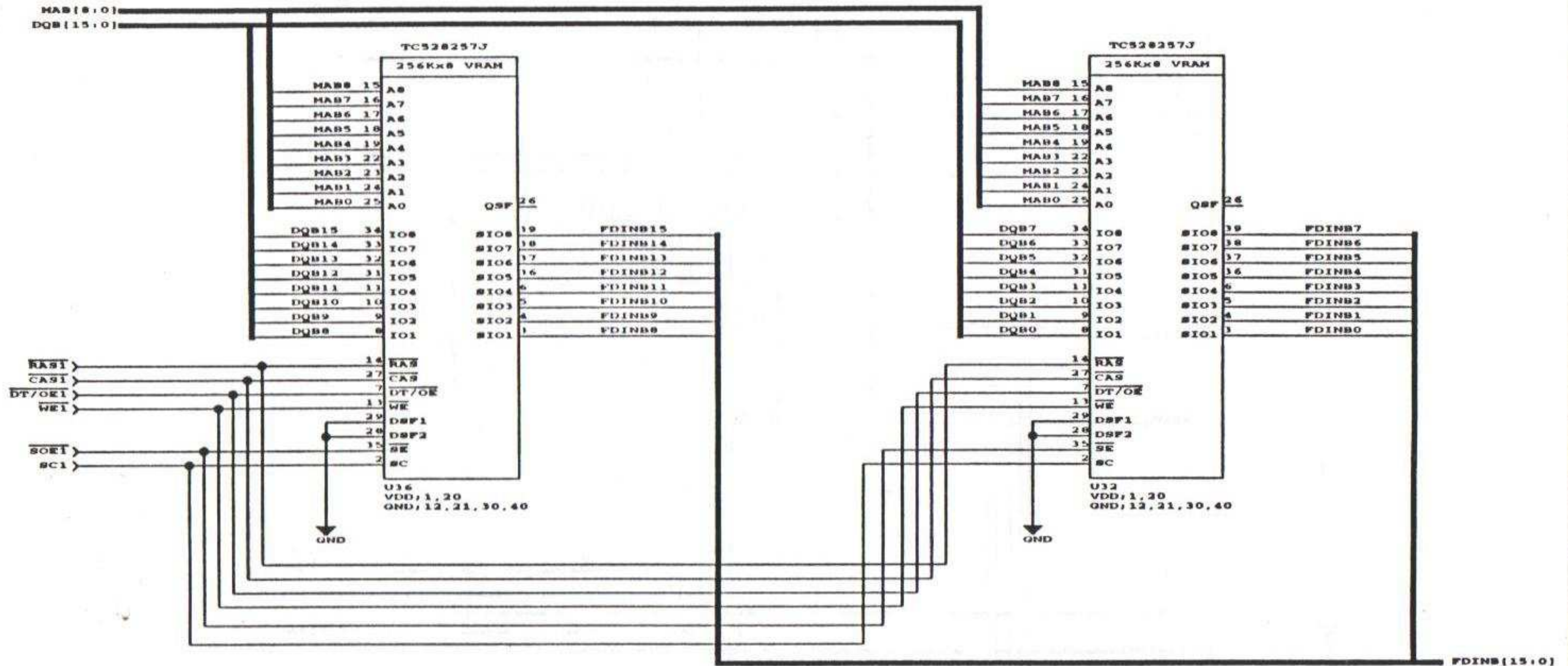


Title: MIX_VM0	Sheet 1	Date: 2-24-1995_10:17
Note: 12-27	SCHM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

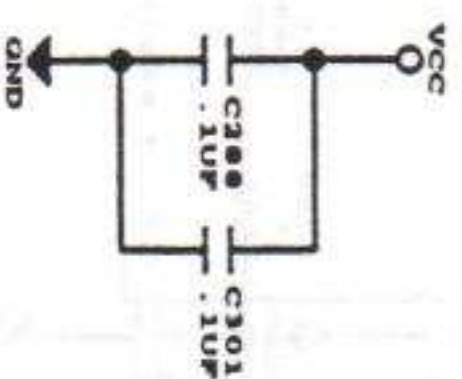
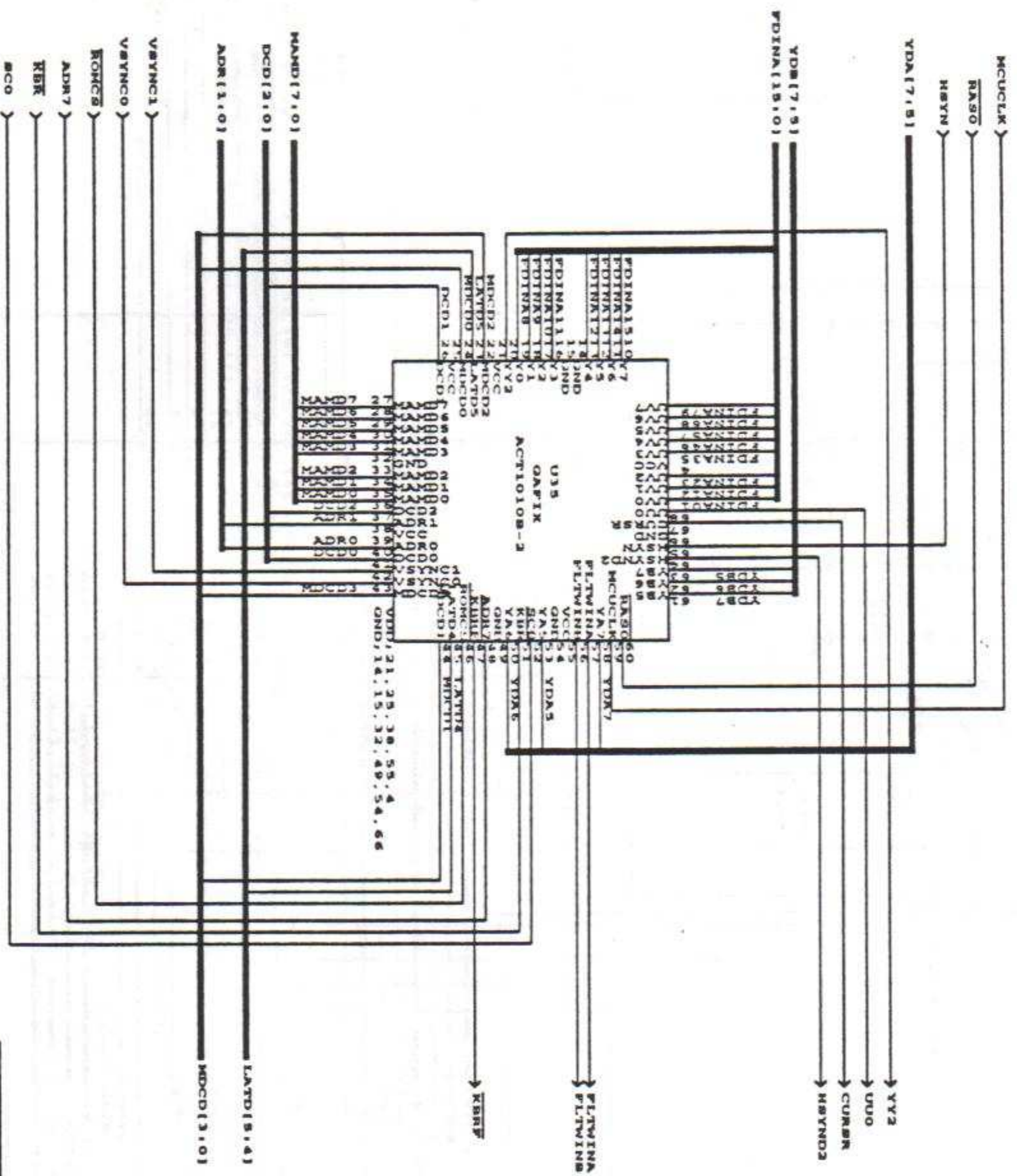


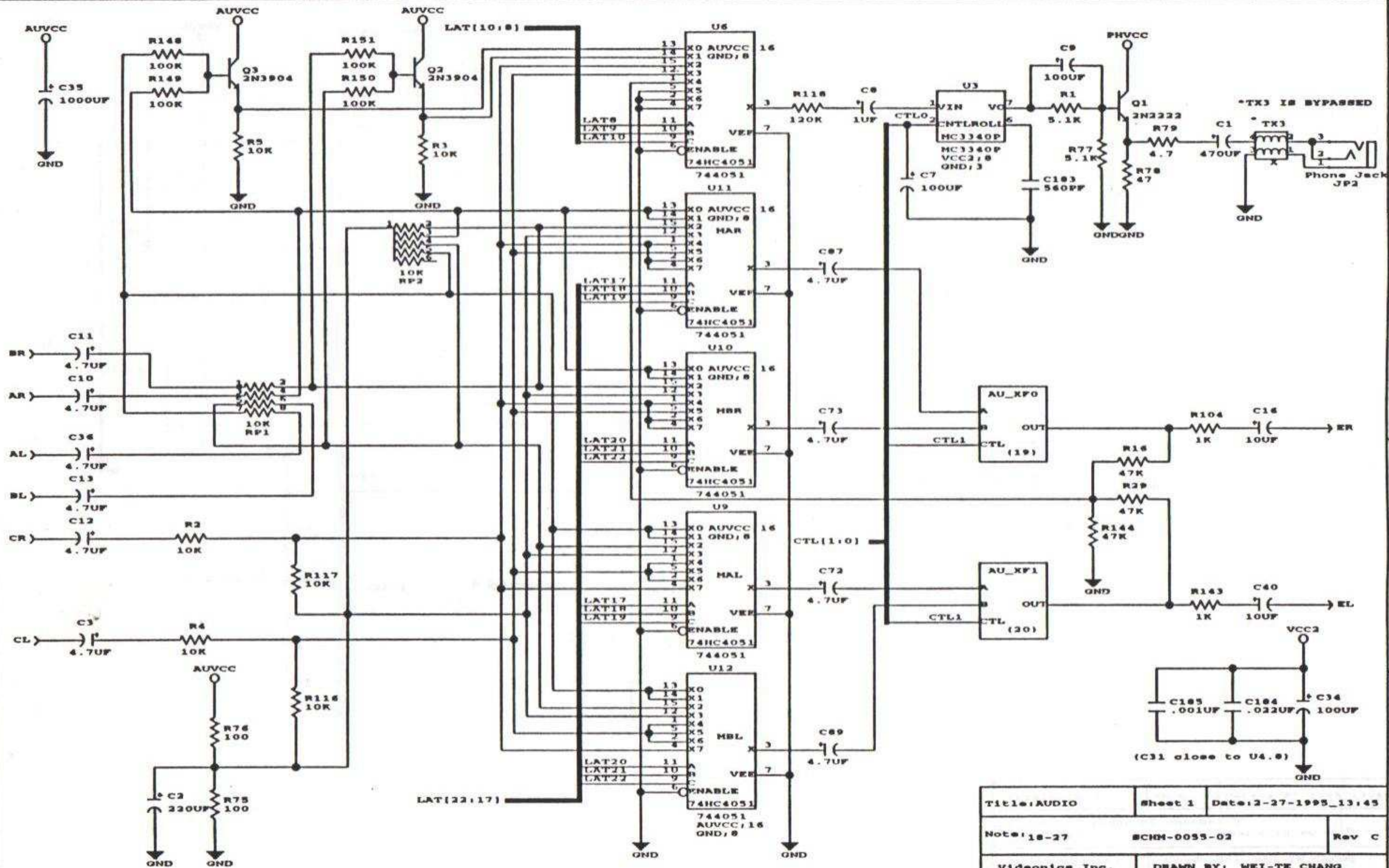
CHANNEL B LUMINANCE

CHANNEL B CHROMA



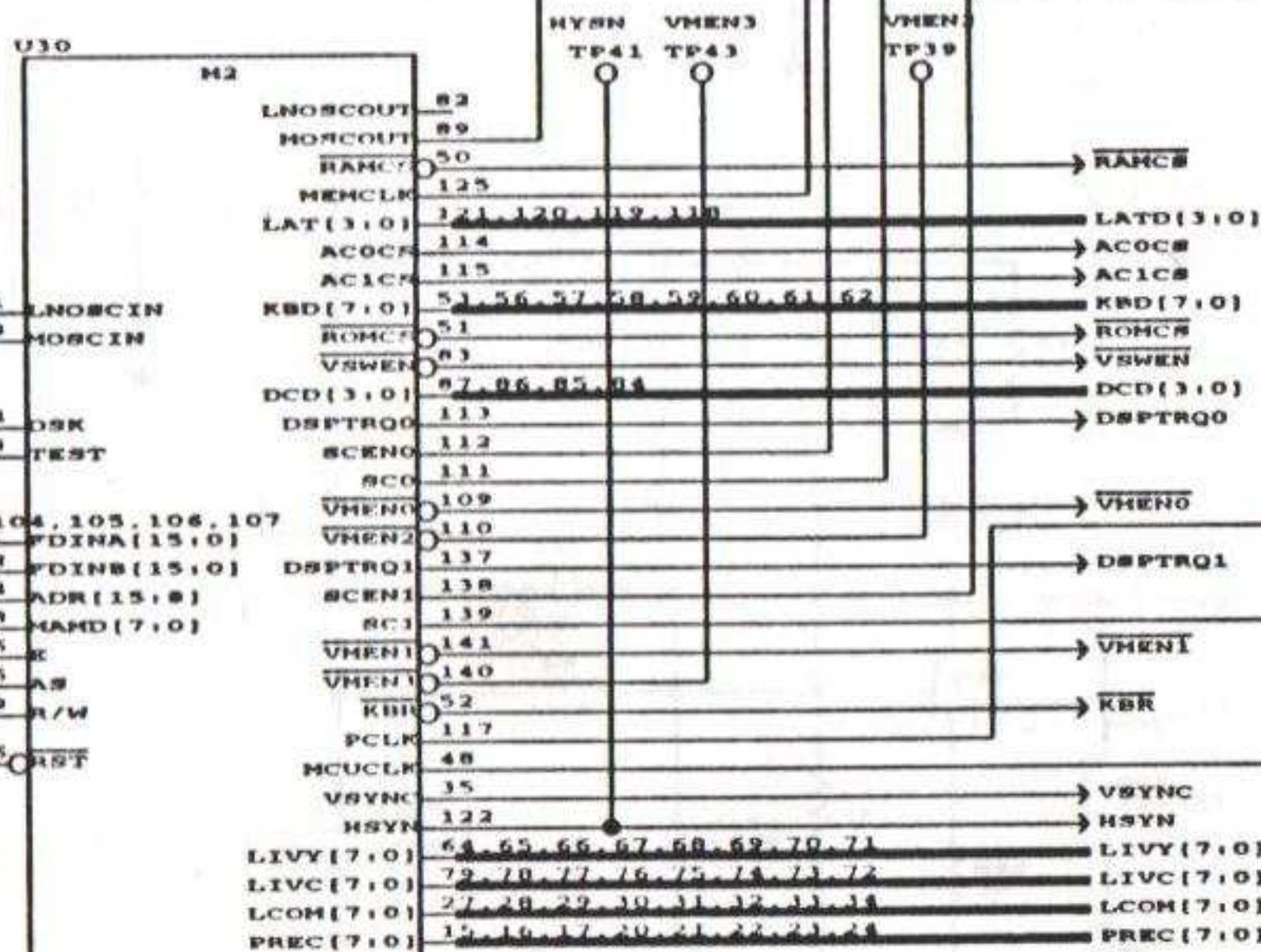
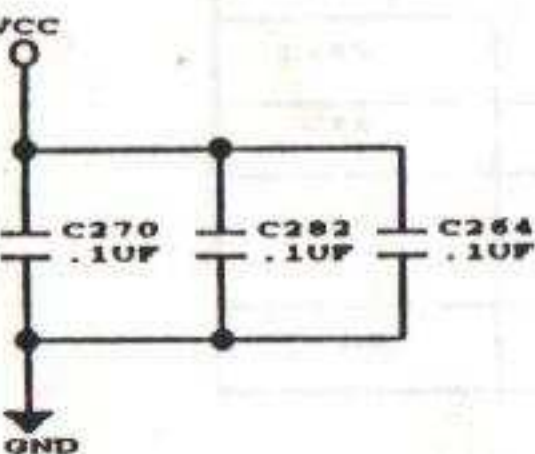
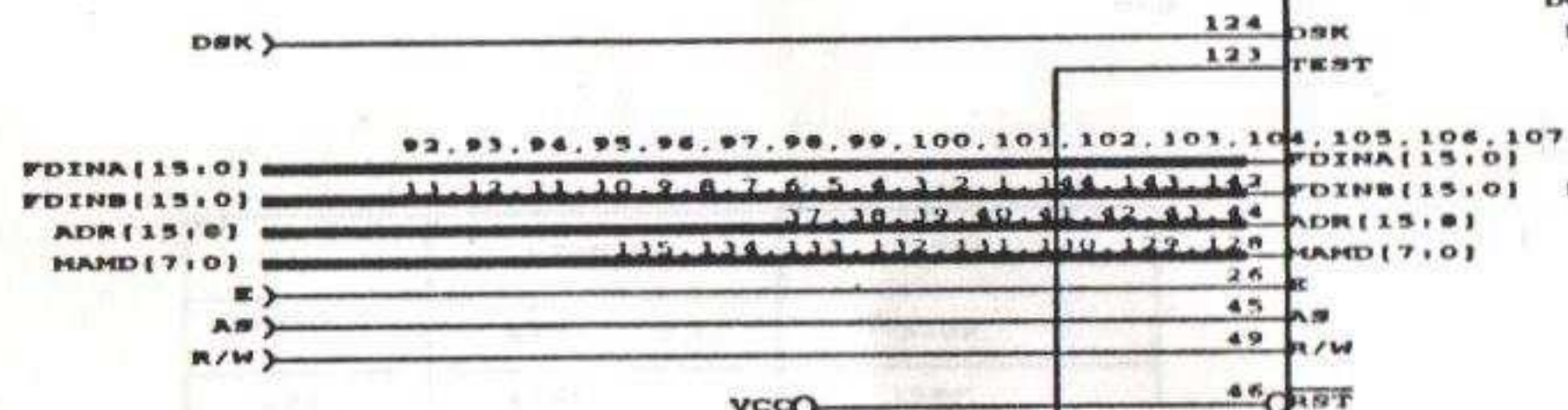
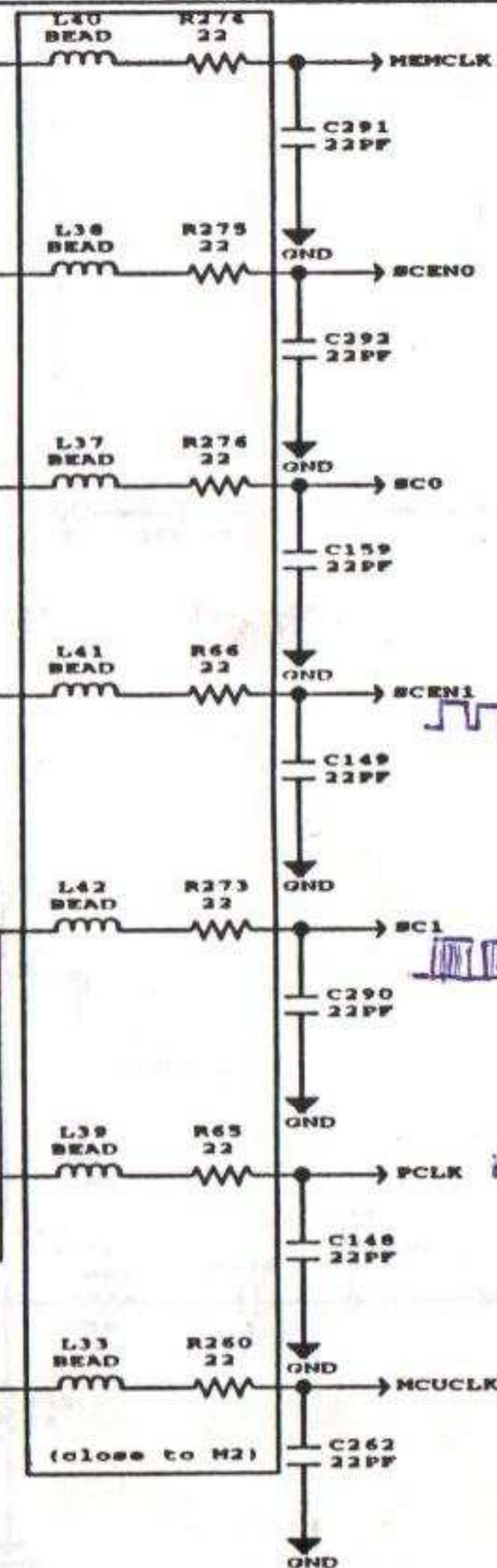
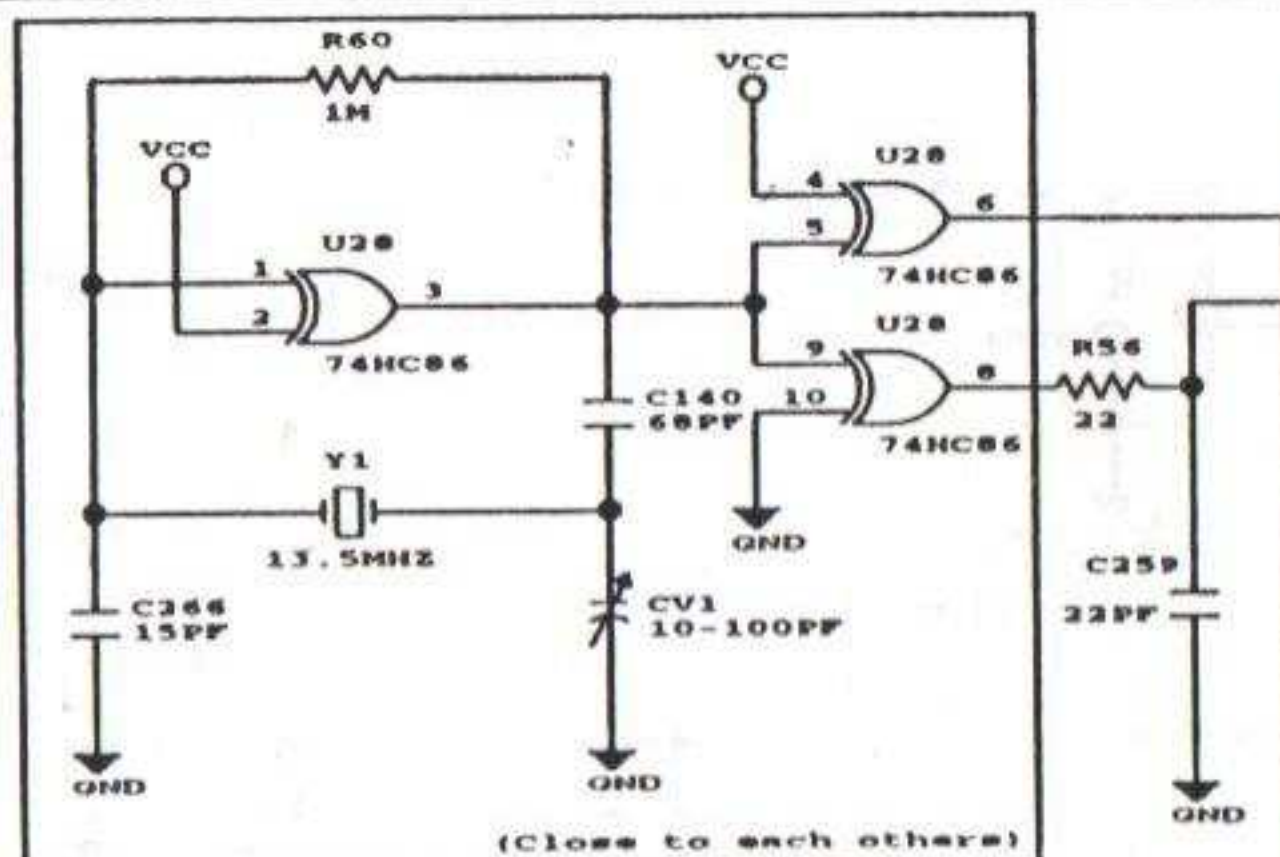
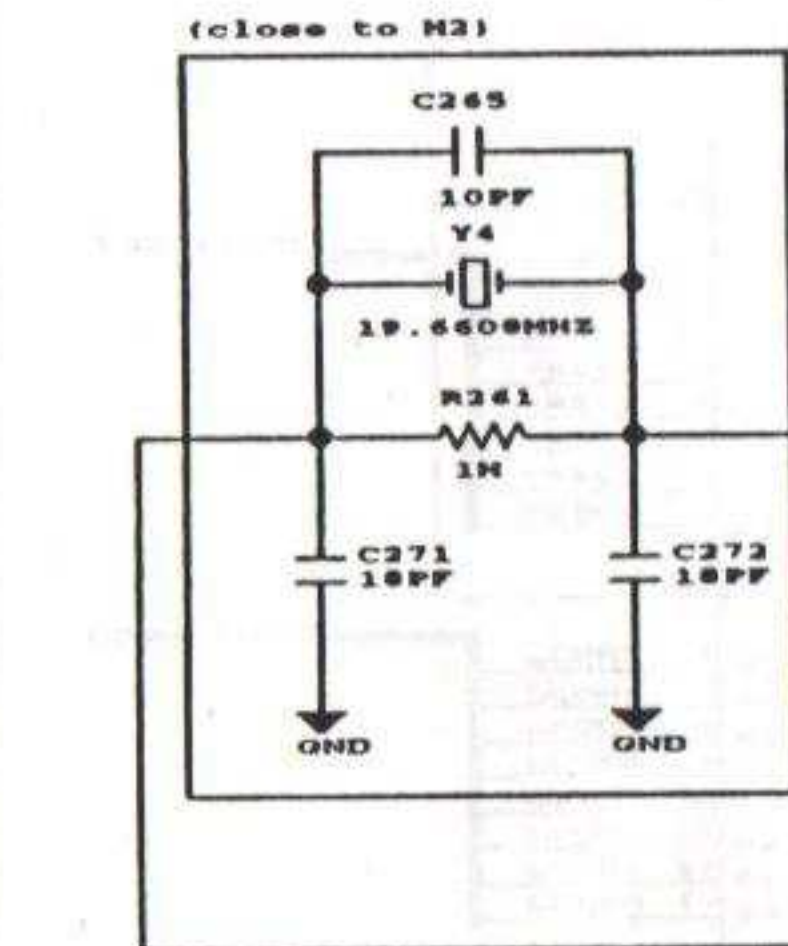
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Note: 13-27	SCNM-0055-02	Rev C
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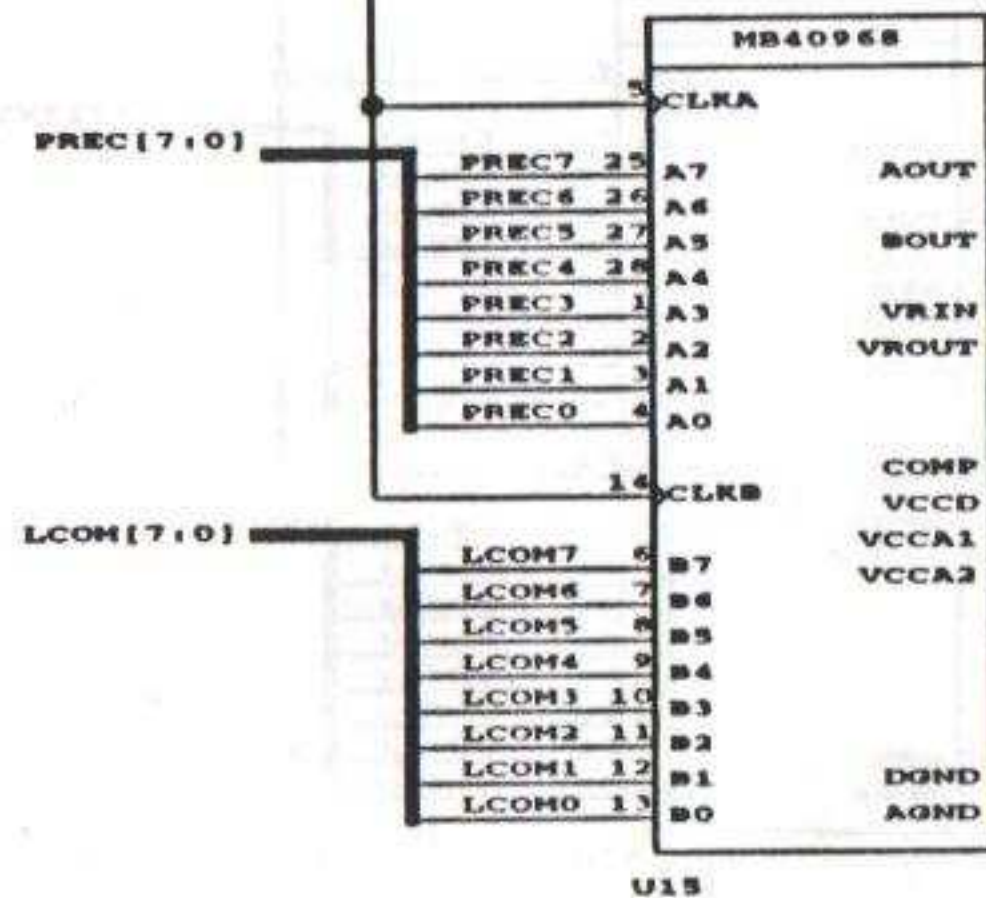
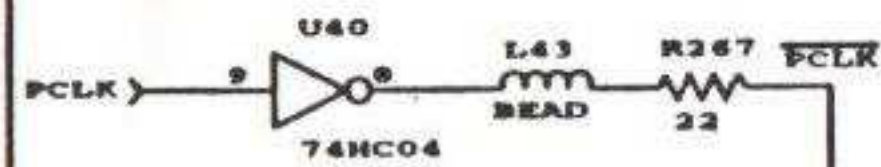
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Notes: 18-27	SCRM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

Note: 1) RW6 between RW1.7 and RW1.14

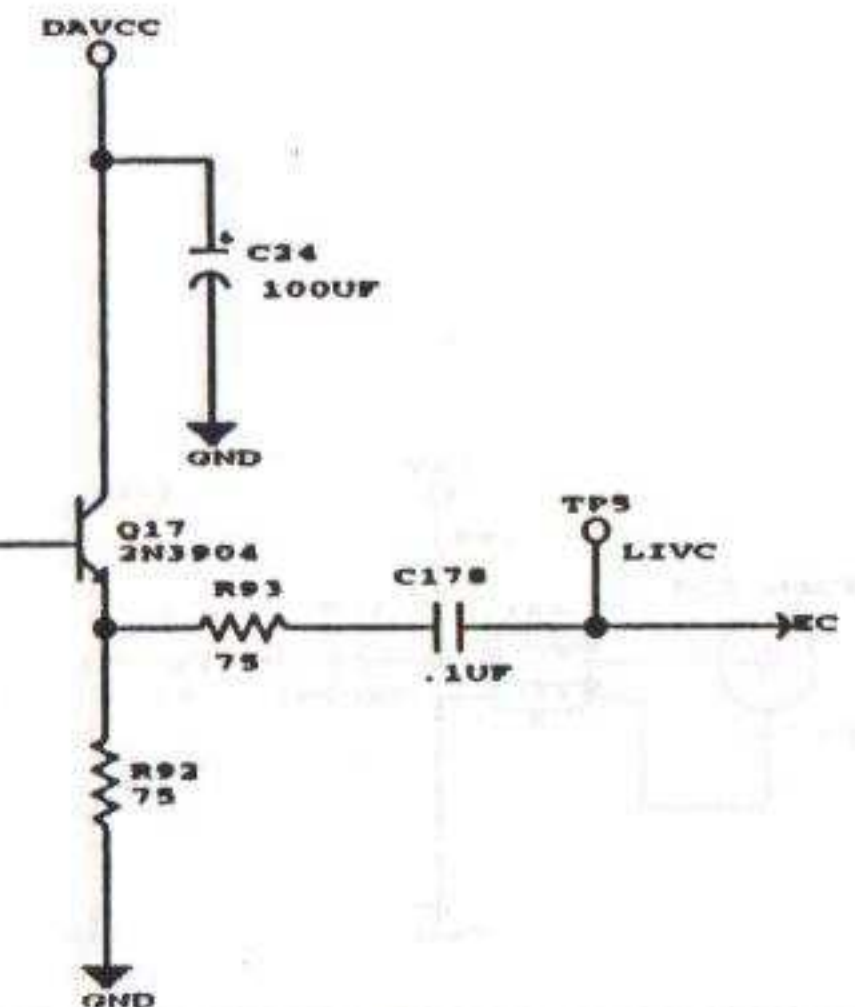
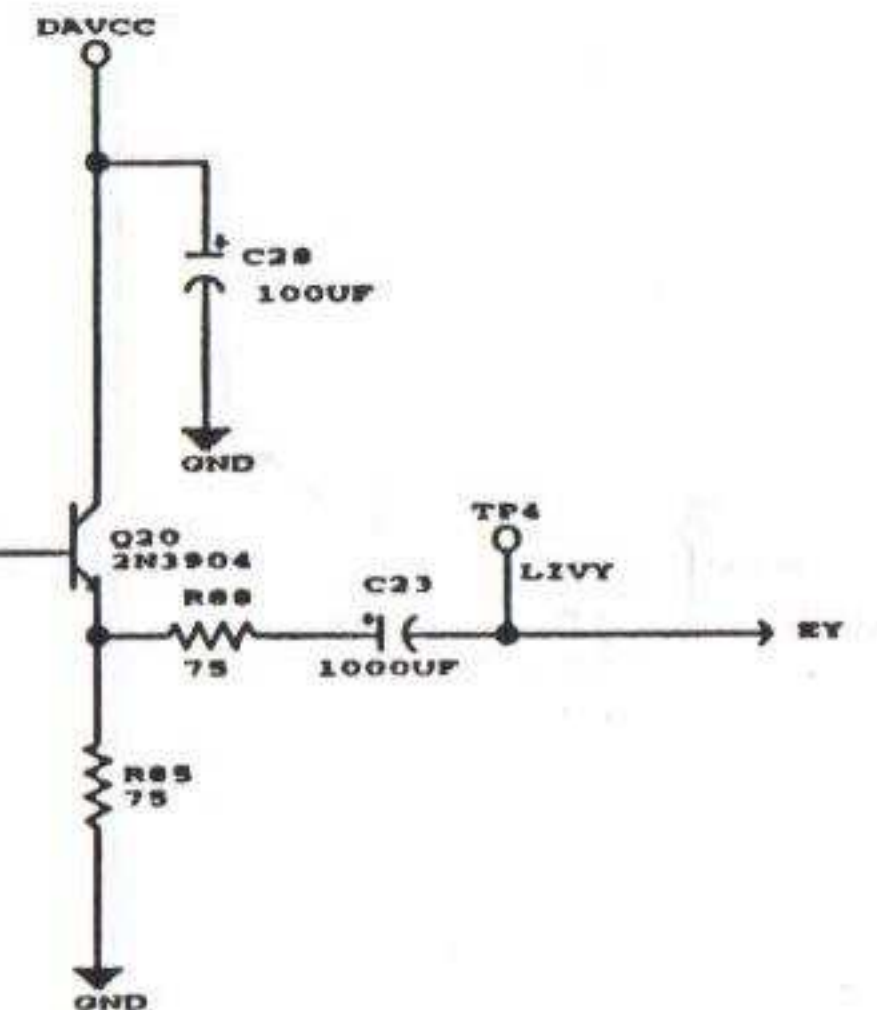
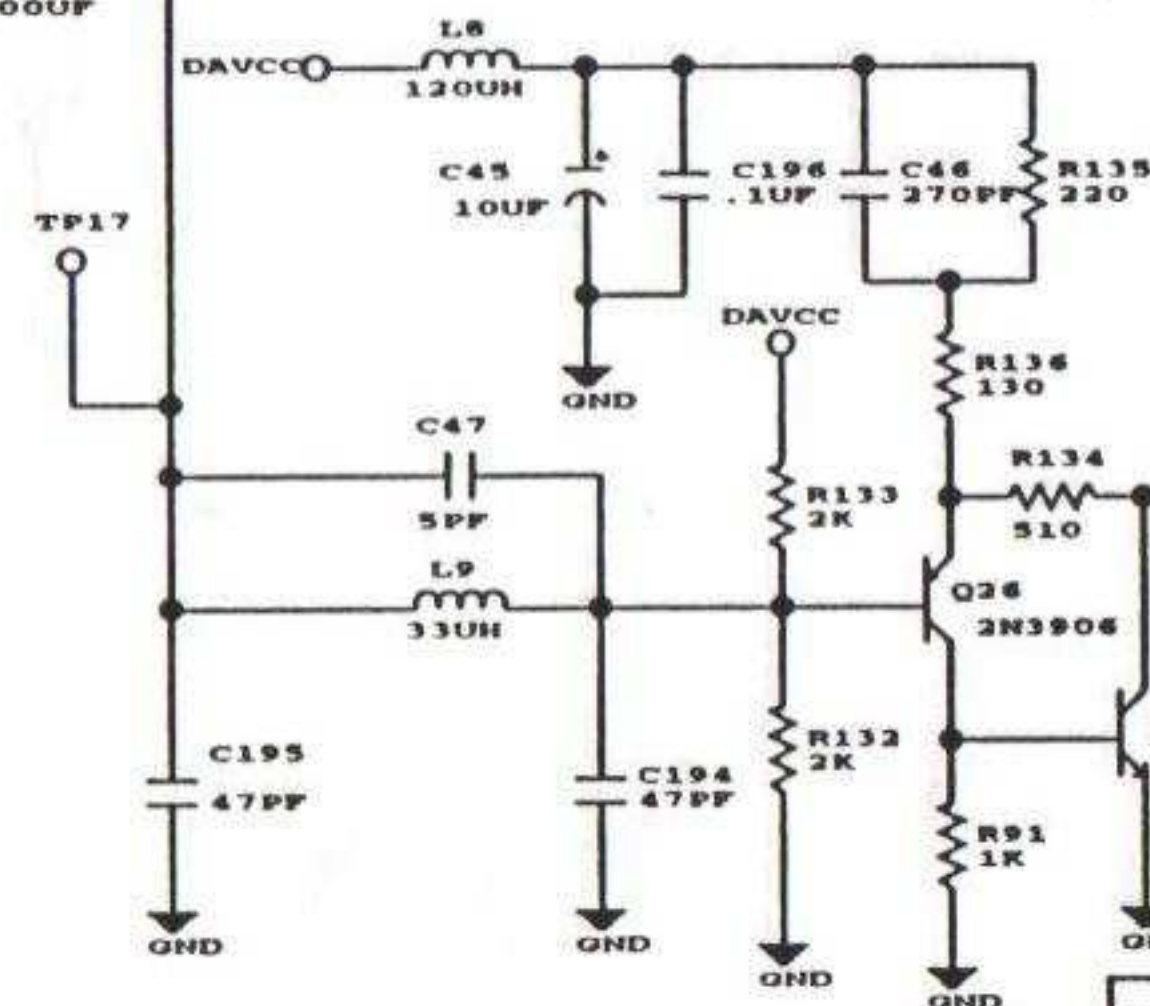
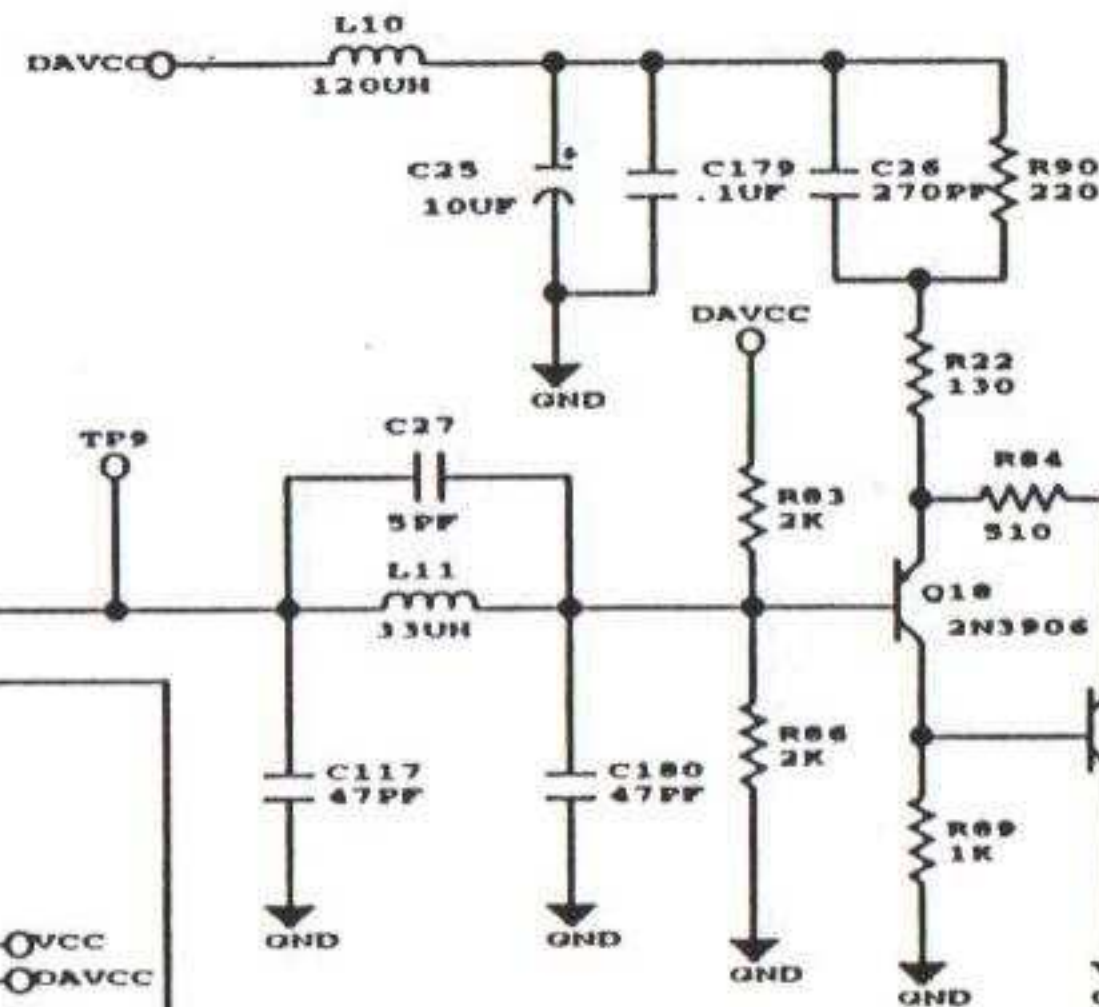


VDD: 14, 18, 54, 80, 90, 108, 126
GND: 19, 25, 36, 47, 55, 63, 91, 116, 127, 136

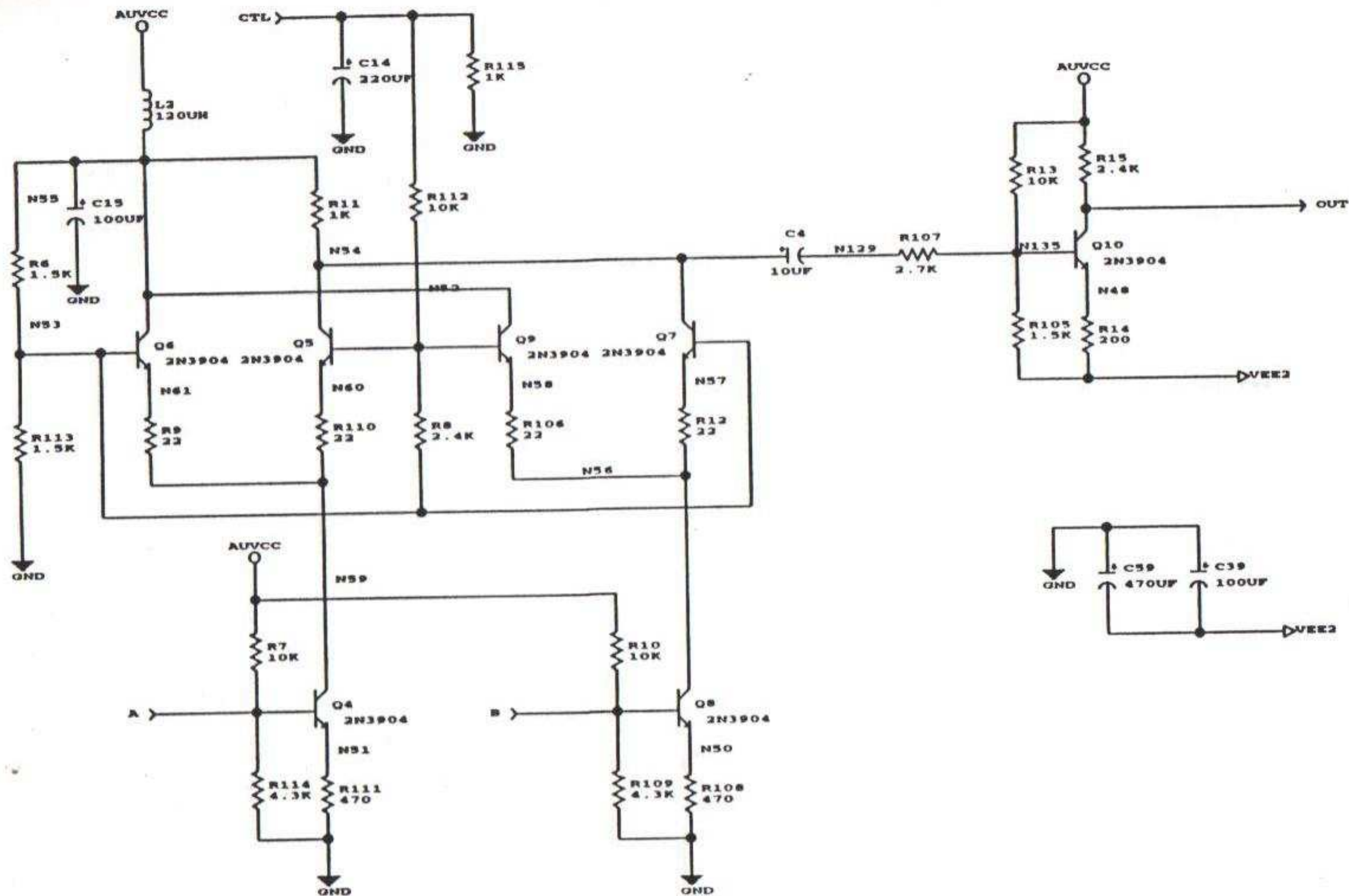
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Note: 15-27	SCHM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	



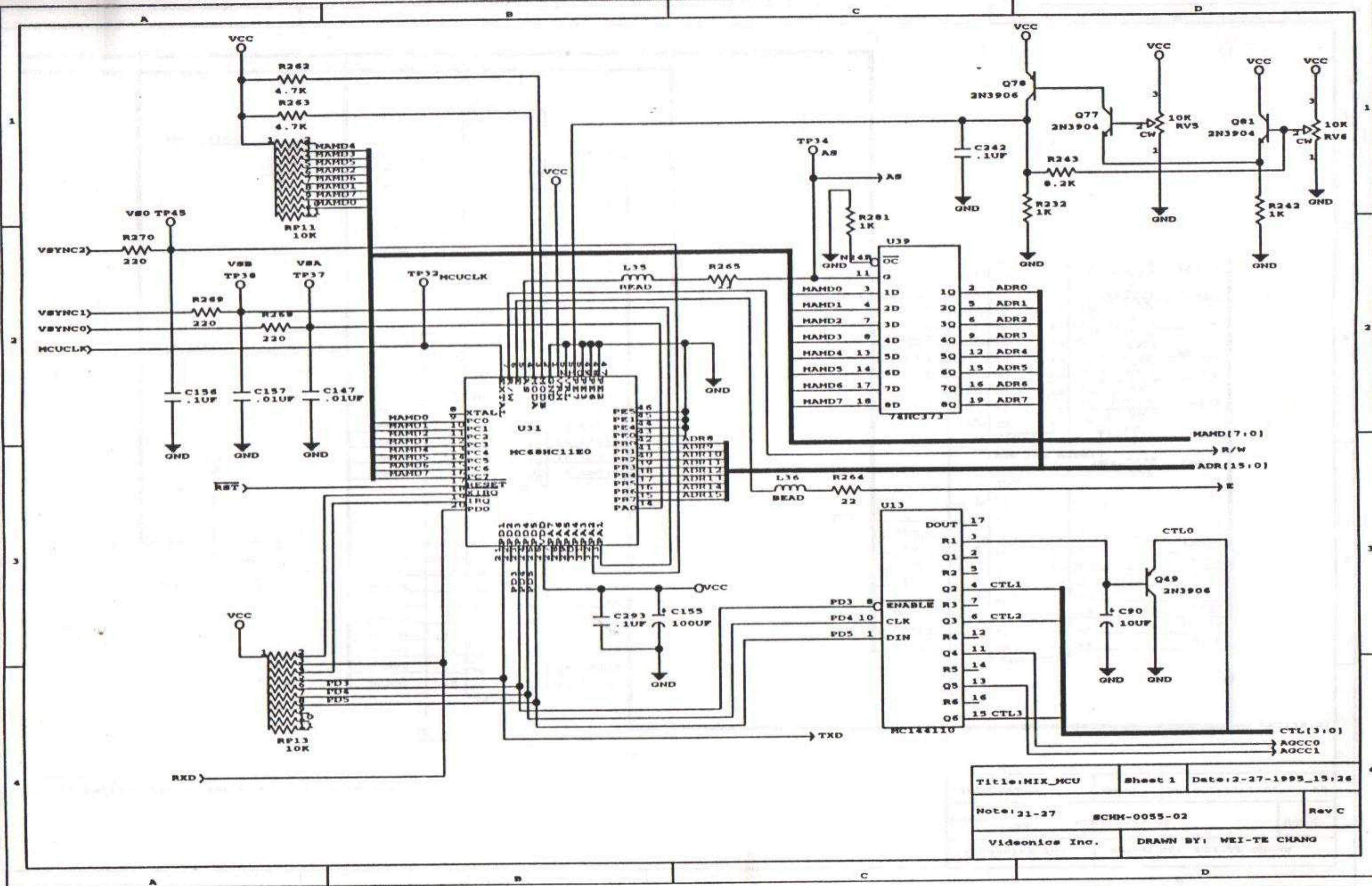
	NTSC	PAL
C200	47PF	33PF
C42	47PF	33PF
C195	47PF	33PF
C44	47PF	33PF
L4	33UH	22UH
L6	33UH	22UH

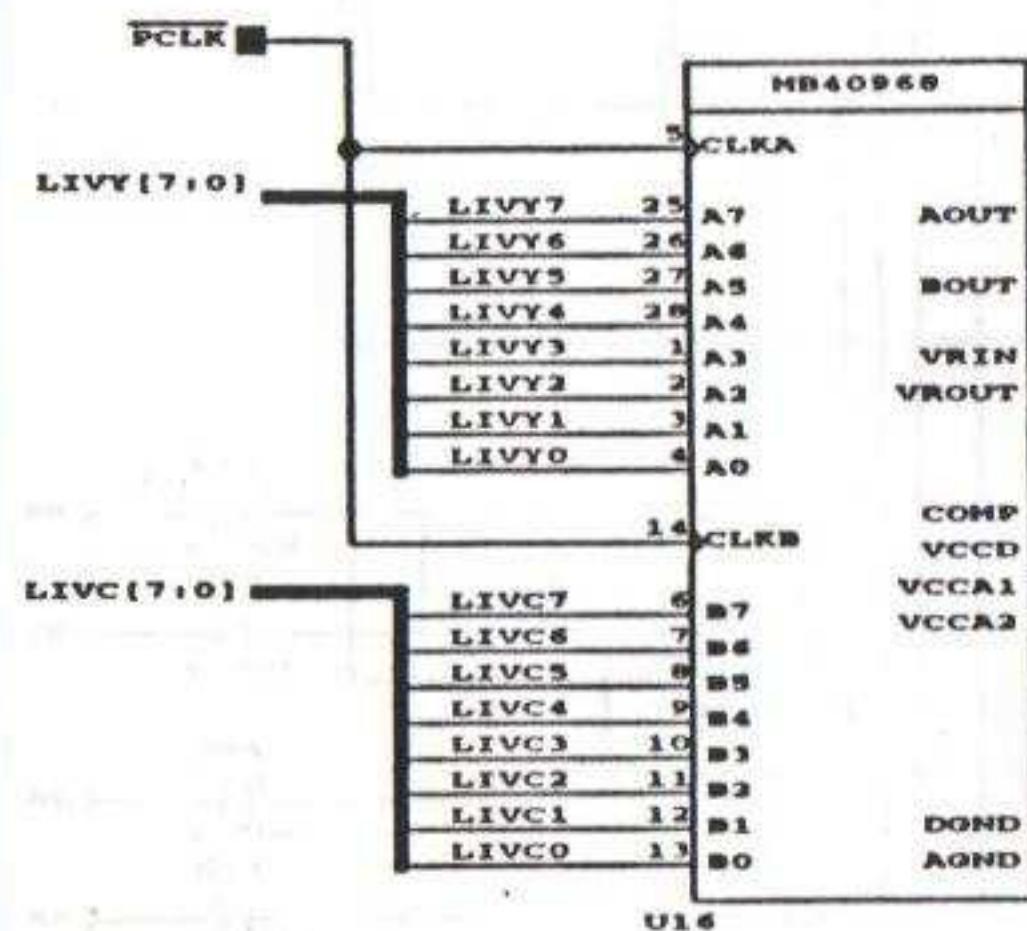


Title: NIX_OUT	Sheet 1	Date: 2-24-1995_13:34
Note: 16-27	SCNM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

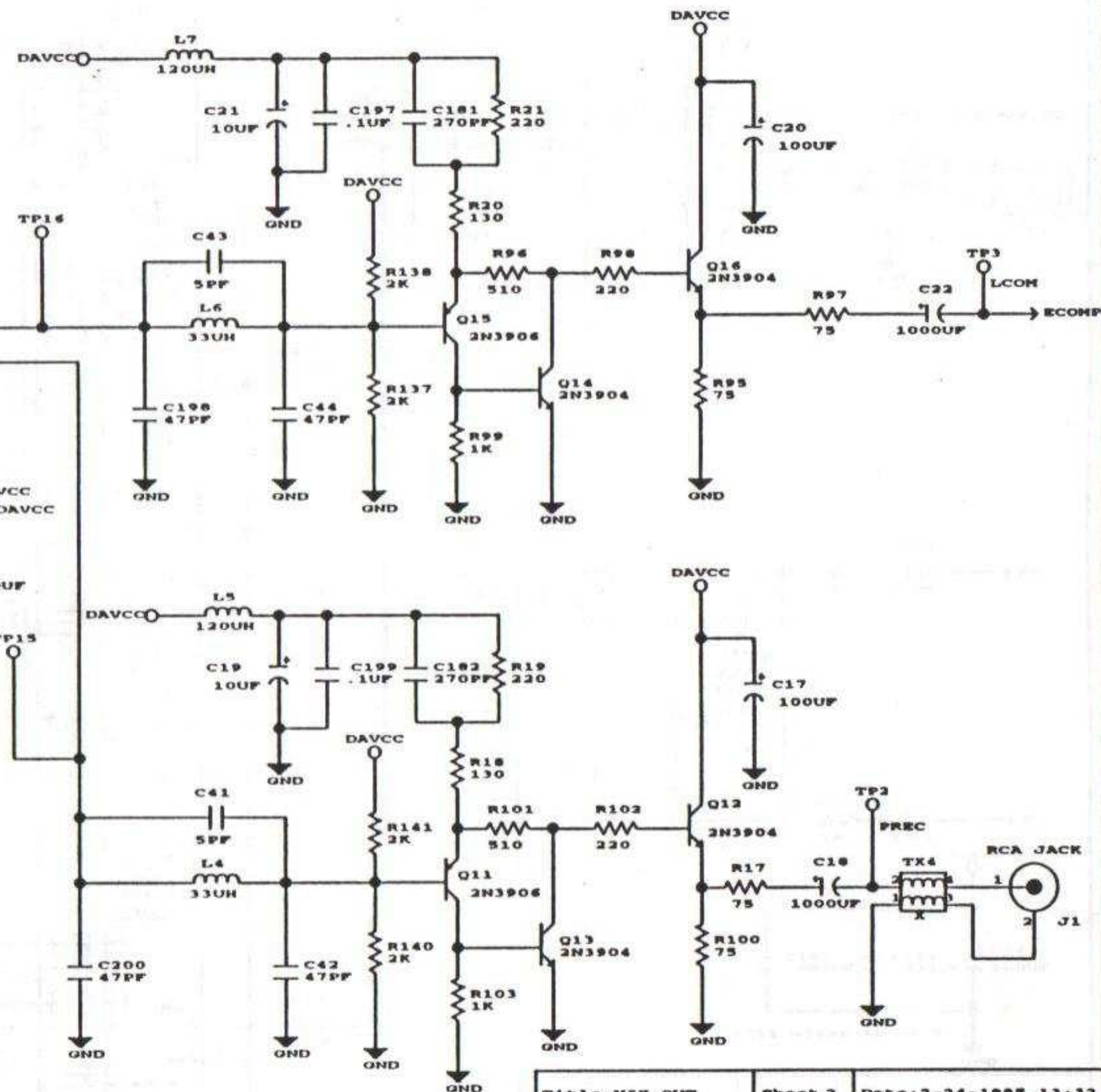


Title: AU_XFO	Sheet 1	Date: 2-27-1995_13:44
Note: Audio fader of channel 0 19-27		Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

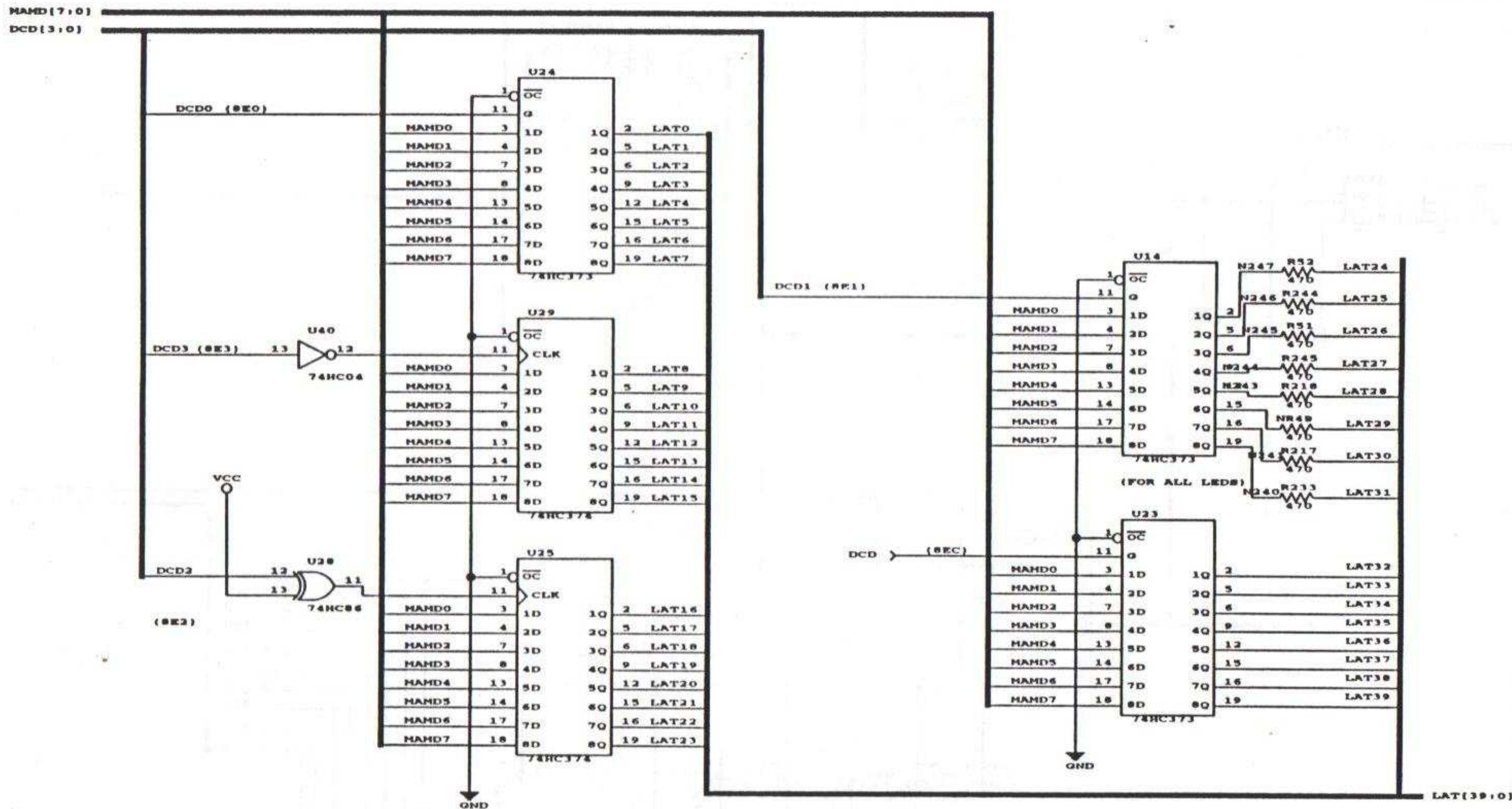




	NTSC	PAL
C194	47PF	33PF
C195	47PF	33PF
C177	47PF	33PF
C180	47PF	33PF
L9	33UH	22UH
L11	33UH	22UH

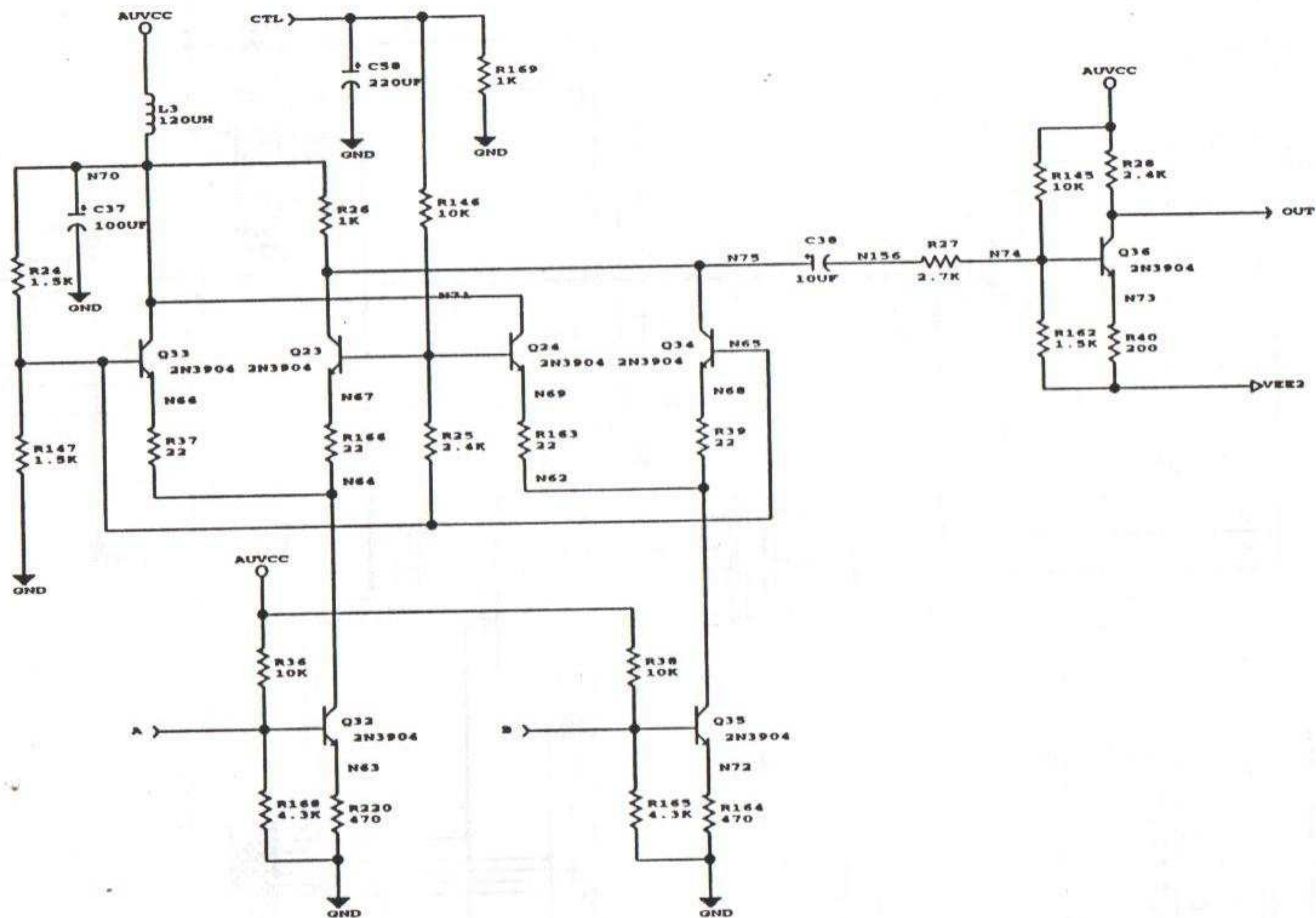


Title: MIX_OUT	Sheet 2	Date: 2-24-1995_13:32
Note: 17-22	SCHM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	

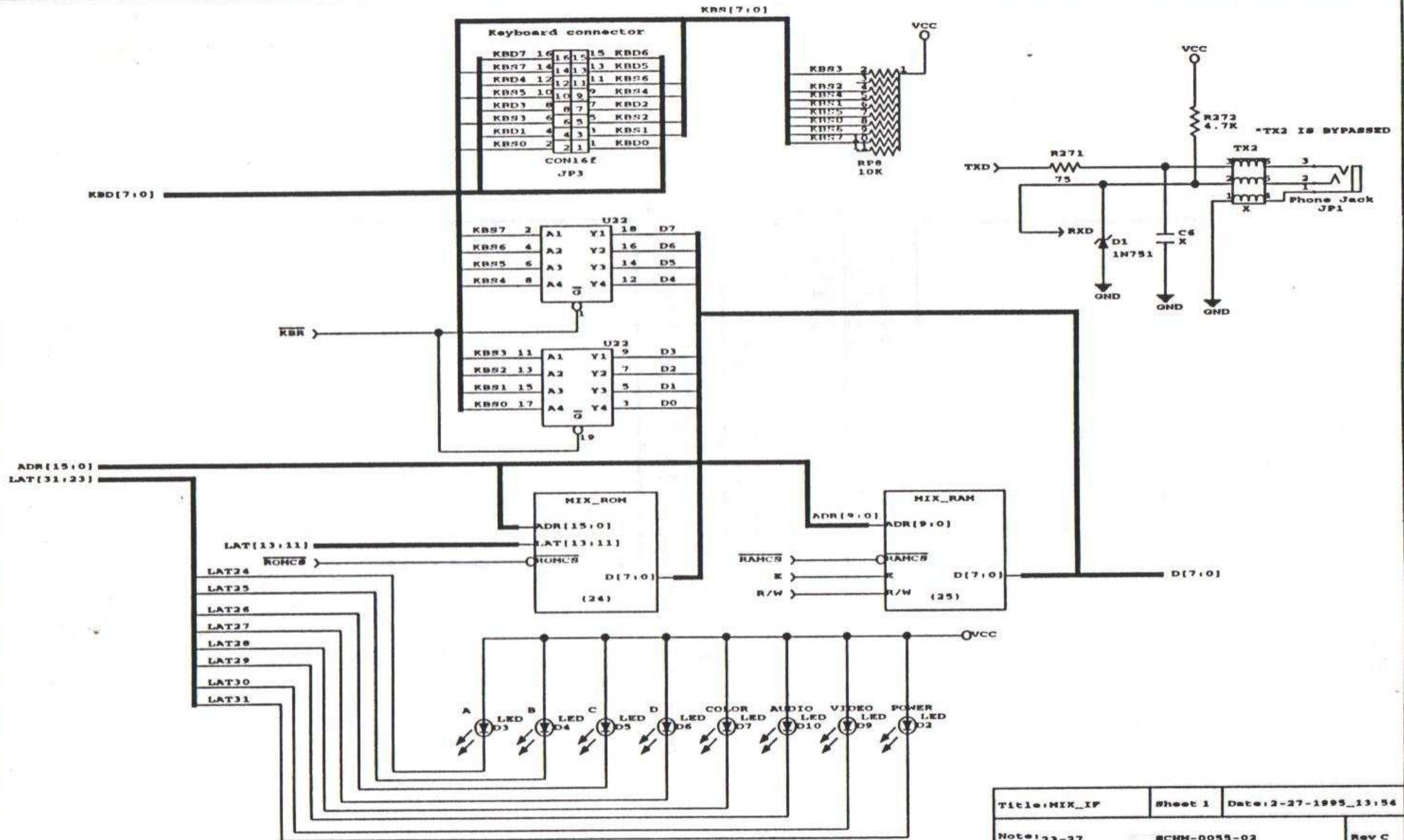


Note:
1) Lat[13..11] is for ROM banks selection

Title: LATCH	Sheet 1	Date: 2-27-1995_13:52
Note: 22-27	SCM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	



Title: AU_XF1	Sheet 1	Date: 2-27-1995_13:46
Note: Audio fader of channel 1 20-27		Rev C
Videonics Inc.		DRAWN BY: WEI-TE CHANG



Title: MIX_IF	Sheet 1	Date: 2-27-1995_13:54
Not: 23-27	SCNM-0055-02	Rev C
Videonics Inc.	DRAWN BY: WEI-TE CHANG	